Immunization Strategies for Healthcare Practices and Providers
## Comparison of 20th Century Annual Morbidity and Current Morbidity: Vaccine-Preventable Diseases

<table>
<thead>
<tr>
<th>Disease</th>
<th>20th Century Annual Morbidity†</th>
<th>2017 Reported Cases † †</th>
<th>Percent Decrease</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diphtheria</td>
<td>21,053</td>
<td>0</td>
<td>100%</td>
</tr>
<tr>
<td>Measles</td>
<td>530,217</td>
<td>122</td>
<td>&gt; 99%</td>
</tr>
<tr>
<td>Mumps</td>
<td>162,344</td>
<td>5,629</td>
<td>97%</td>
</tr>
<tr>
<td>Pertussis</td>
<td>200,752</td>
<td>15,808</td>
<td>&gt;92%</td>
</tr>
<tr>
<td>Polio (paralytic)</td>
<td>16,316</td>
<td>0</td>
<td>100%</td>
</tr>
<tr>
<td>Rubella</td>
<td>47,745</td>
<td>9</td>
<td>&gt; 99%</td>
</tr>
<tr>
<td>Congenital Rubella Syndrome</td>
<td>152</td>
<td>2</td>
<td>99%</td>
</tr>
<tr>
<td>Tetanus</td>
<td>580</td>
<td>32</td>
<td>95%</td>
</tr>
<tr>
<td><em>Haemophilus influenzae</em></td>
<td>20,000</td>
<td>22</td>
<td>&gt; 99%</td>
</tr>
<tr>
<td>Total</td>
<td>999,159</td>
<td>24,493</td>
<td>97%</td>
</tr>
</tbody>
</table>

†JAMA. 2007;298(18):2155-2163


*Haemophilus influenzae* type b (Hib) < 5 years of age. An additional 11 cases of Hib are estimated to have occurred among the 237 notifications of Hib (< 5 years of age) with unknown serotype.
## Estimated Vaccination Coverage among Children Aged 19–35 Months, NIS 2016

<table>
<thead>
<tr>
<th>State/Area</th>
<th>Combined Series*</th>
</tr>
</thead>
<tbody>
<tr>
<td>United States</td>
<td>70.7%</td>
</tr>
</tbody>
</table>

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

*MMWR Weekly / November 3, 2017 / 66(43);1171–1177, and data at [https://www.cdc.gov/vaccines/imz-managers/coverage/childvaxview/data-reports/7-series/reports/2016.html](https://www.cdc.gov/vaccines/imz-managers/coverage/childvaxview/data-reports/7-series/reports/2016.html)*

Abbreviations:  ACIP = Advisory Committee on Immunization Practices; APD = adequate provider data; HPV = human papillomavirus; MenACWY = quadrivalent meningococcal conjugate vaccine; Tdap = tetanus toxoid, diphtheria toxoid, and acellular pertussis vaccine. † NIS-Teen implemented a revised APD definition in 2014 and retrospectively applied the revised APD definition to 2013 data. Estimates using different APD definitions might not be directly comparable.
## Estimated Vaccination Coverage among Adolescents Aged 13–17 Years, NIS-Teen, 2016

<table>
<thead>
<tr>
<th>Vaccine</th>
<th>United States</th>
</tr>
</thead>
<tbody>
<tr>
<td>≥1 Tdap</td>
<td>88.0%</td>
</tr>
<tr>
<td>≥1 HPV (M and F)</td>
<td>60.4%</td>
</tr>
<tr>
<td>UTD HPV (M and F)</td>
<td>43.4%</td>
</tr>
<tr>
<td>≥1 MenACWY</td>
<td>82.2%</td>
</tr>
</tbody>
</table>

Flu vaccination coverage among health care personnel vaccinated by November and by April for 2010–11 through 2016–17 flu seasons, and by November for 2017–18 flu season, Internet panel survey, United States

Adult Immunization Coverage, Selected Vaccines by Age and Increased-risk Status, 2013-2015, United States

HP2020 Targets: 90% PPV ≥65 yrs, 60% PPV IR 19-64 yrs, 30% zoster ≥60 yrs

Data Source: 2013, 2014 and 2015 NHIS

Surveillance of Vaccination Coverage Among Adult Populations — United States, 2015  MMWR Surveillance Summaries / May 5, 2017 / 66(11);1–28
Adult Tetanus-containing Vaccination Coverage by Age and High-risk Status, United States

Data Source: 2015 NHIS
Surveillance of Vaccination Coverage Among Adult Populations — United States, 2015
MMWR Surveillance Summaries / May 5, 2017 / 66(11);1–28
Strategies Overview

- Many available strategies
- Some targeted to public and/or non-healthcare settings
  - School immunization requirements
  - Women Infant and Children (WIC) services
  - Home visits

- Match strategy to the problem and population
- Today’s focus on healthcare settings
AFIX Program

- Assessment
- Feedback
- Incentives
- eXchange

https://www.cdc.gov/vaccines/programs/afix/index.html
Special Characteristics of AFIX

- Focuses on outcomes
- Focuses on providers
- Blend of advanced technology and personal interaction
Assessment

- Assessment involves generating data reports on a provider’s vaccination coverage levels, and examining the impact of a provider’s vaccination delivery practices.

- Targeted diagnosis for improvement

- Assessment increases awareness
Assessments – Cont.

- Immunization Information Systems (IIS): Assessment reports are generated using IIS data if awardee has robust IIS. CDC released AFIX-IIS Integration Operational and Technical Guidance for Implementing IIS-Based Coverage Assessment—Phase I and Phase II.

- Comprehensive Clinic Assessment Software Application (CoCASA): Assessment reports may be generated using CoCASA. CDC has plans to phase this software out.

www.cdc.gov/vaccines/programs/cocasa/index.html
www.cdc.gov/vaccines/programs/afix/index.html
Feedback

- Feedback provides an opportunity to share Assessment results with providers, discuss practice procedures and barriers, and collaborate to develop customized evidence-based quality improvement strategies.
Incentives

- Something that incites to action or effort
- Vary by provider and stage of progress
- Opportunities for partnership and collaboration
**eXchange of Information**

- eXchange is the ongoing dialogue between the immunization program and providers regarding their progress in adopting strategies to improve vaccination delivery.
Strategies for High Immunization Levels

- Recordkeeping
- Immunization Information Systems (IIS)
- Recommendations and reinforcement
- Reminder and recall to patients
- Reminder and recall to providers
- Reduction of missed opportunities
- Reduction of barriers to immunization
Records

- Available for inspection
- Easy to interpret
- Accurate, up-to-date, and complete
  - Reflect current patient population
  - Reflect all vaccines given
Immunization Information Systems (IIS)

- Single data source for all providers
- Reliable immunization history
- Produce records for patient use
- Increase vaccination rates

www.cdc.gov/vaccines/programs/iis/index.html
Recommendations and Reinforcement

- **Recommend the vaccine**
  - powerful motivator
  - patients likely to follow recommendation of the provider

- **Reinforce the need to return**
  - verbal
  - written
  - link to calendar event
Reminders and Recall to Patients

- Reminder—notification that immunizations are due soon

- Recall—notification that immunizations are past due

- Content of message and technique of delivery vary

- Reminders and recall have been found to be effective

https://www.whyimmunize.org/product/reminder-postcards-baby-bilingual/
Reminders and Recall to Providers

- Communication to healthcare providers that a patient’s immunizations are due soon or past due

- Examples
  - computer-generated list
  - stamped note in the chart
  - “Immunization Due” clip on chart
  - electronic reminder in an electronic medical record
Missed Opportunity

A healthcare encounter in which a person is eligible to receive vaccination but is not vaccinated completely
Reasons for Missed Opportunities

- Lack of simultaneous administration
- Unaware child (or adult) needs additional vaccines
- Invalid contraindications
- Inappropriate clinic policies
- Reimbursement deficiencies
Strategies for Reducing Missed Opportunities

- Standing orders
- Provider education with feedback
- Provider reminder and recall systems
Reduction of Barriers to Immunization

- Physical barriers clinic hours
  - waiting time
  - distance
  - cost

- Psychological barriers
  - unpleasant experience
  - vaccine safety concerns
## Costs of Implementing Strategies

<table>
<thead>
<tr>
<th>Intervention Strategy</th>
<th>Median Intervention Group Size</th>
<th>Median cost per person per year</th>
<th>Median cost per vaccinated person (US$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Home visits</td>
<td>575</td>
<td>56</td>
<td>786</td>
</tr>
<tr>
<td>Client/family incentive, reducing costs</td>
<td>774</td>
<td>209</td>
<td>399</td>
</tr>
<tr>
<td><strong>Vac in schools, child care</strong></td>
<td><strong>5,840</strong></td>
<td><strong>22</strong></td>
<td><strong>29</strong></td>
</tr>
<tr>
<td>Vac in WIC settings</td>
<td>4,967</td>
<td>16</td>
<td>66</td>
</tr>
<tr>
<td><strong>Client reminder/recall</strong></td>
<td><strong>654</strong></td>
<td><strong>2.13</strong></td>
<td><strong>15</strong></td>
</tr>
<tr>
<td>Community based strategies in combination</td>
<td>429</td>
<td>54</td>
<td>15</td>
</tr>
<tr>
<td>Provider reminders/assessment/feedback</td>
<td>2,705</td>
<td>4</td>
<td>111</td>
</tr>
<tr>
<td><strong>Standing Orders</strong></td>
<td><strong>11,813</strong></td>
<td><strong>6</strong></td>
<td><strong>29</strong></td>
</tr>
<tr>
<td>Healthcare system strategies in combination</td>
<td><strong>20,000</strong></td>
<td><strong>4</strong></td>
<td><strong>12</strong></td>
</tr>
</tbody>
</table>

Provider Resources

- Conversations with parents:
  - https://www.cdc.gov/vaccines/hcp/patient-ed/conversations/

- Vaccines for Children Program

- The Guide to Community Preventive Services
  - http://www.thecommunityguide.org/


  - http://www.publichealthreports.org/issueopen.cfm?articleID=3145