CDC Update on Achieving Healthy People 2020 Objectives for Immunization and Vaccine-Preventable Diseases

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NVAC Meeting, September 10, 2014
Washington, DC
Outline

- Update on immunization & vaccine-preventable disease objective progress
- Selected barriers
  - Product issues
  - Consumer and patient issues
  - Provider and system issues
- Summary and discussion
Increasing Vaccine-Specific Coverage Rates Among Preschool-Aged Children: 1967 - 2013

HP 2020 Target

DTP / DTaP (3+)

MMR (1+)

Polio (3+)

Hep B (3+)

PCV (4+)

Hep A (2+)

RV

Hib

Varicella (1+)

MMWR 63(16);352-355, April 25, 2014
Children 19-35 Months Who Received No Vaccinations, 2008-2013, U.S.

HP2020 objective IID-9 (tracking measure)

Survey Year

% zero vaccinations

HP2020 Goal: <1%

2008: 0.6
2009: 0.6
2010: 0.7
2011: 0.8
2012: 0.8
2013: 0.7

MMWR 63(34); 741-748, August 29, 2014
Estimated Vaccination Coverage, Children 19-35 Months, New Healthy People 2020 Objectives

* HP2020 target for birth dose of HepB is measured by birth cohort. Data shown are estimates from the 2005-2010 birth cohorts.

** 2 or 3 doses, depending on the type of rotavirus vaccine received

Source: CDC, NIS
### Comparison of 20\textsuperscript{th} Century Annual Morbidity and Current Morbidity: Vaccine-Preventable Diseases

<table>
<thead>
<tr>
<th>Disease</th>
<th>20th Century Annual Morbidity(\dagger)</th>
<th>2013 Reported Cases (\dagger\dagger)</th>
<th>Percent Decrease</th>
</tr>
</thead>
<tbody>
<tr>
<td>Smallpox</td>
<td>29,005</td>
<td>0</td>
<td>100%</td>
</tr>
<tr>
<td>Diphtheria</td>
<td>21,053</td>
<td>0</td>
<td>100%</td>
</tr>
<tr>
<td>Measles</td>
<td>530,217</td>
<td>187</td>
<td>&gt; 99%</td>
</tr>
<tr>
<td>Mumps</td>
<td>162,344</td>
<td>584</td>
<td>&gt; 99%</td>
</tr>
<tr>
<td>Pertussis</td>
<td>200,752</td>
<td>28,639</td>
<td>86%</td>
</tr>
<tr>
<td>Polio (paralytic)</td>
<td>16,316</td>
<td>1</td>
<td>&gt; 99%</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>1</td>
<td>99%</td>
</tr>
<tr>
<td>Tetanus</td>
<td>580</td>
<td>26</td>
<td>96%</td>
</tr>
<tr>
<td>(\textit{Haemophilus influenzae})</td>
<td>20,000</td>
<td>31*</td>
<td>&gt; 99%</td>
</tr>
</tbody>
</table>

\(\dagger\) \textit{JAMA. 2007;298(18):2155-2163}

\(\dagger\dagger\) \textit{CDC. MMWR August 15, 2014:63(32):702-715. (MMWR 2013 final data)}

* \(\textit{Haemophilus influenzae}\) type b (Hib) < 5 years of age. An additional 10 cases of Hib are estimated to have occurred among the 185 reports of Hi (< 5 years of age) with unknown serotype.
<table>
<thead>
<tr>
<th>Disease</th>
<th>Pre-Vaccine Era Annual Estimate†</th>
<th>2013 Estimate*</th>
<th>Percent Decrease</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hepatitis A</td>
<td>117,333</td>
<td>2,890</td>
<td>98%</td>
</tr>
<tr>
<td>Hepatitis B (acute)</td>
<td>66,232</td>
<td>18,800</td>
<td>72%</td>
</tr>
<tr>
<td>Pneumococcus (invasive)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>all ages</td>
<td>63,067</td>
<td>33,500</td>
<td>47%</td>
</tr>
<tr>
<td>&lt; 5 years of age</td>
<td>16,069</td>
<td>1,900</td>
<td>88%</td>
</tr>
<tr>
<td>Rotavirus (hospitalizations, &lt; 3 years of age)</td>
<td>62,500 *</td>
<td>12,500</td>
<td>80%</td>
</tr>
<tr>
<td>Varicella</td>
<td>4,085,120</td>
<td>167,490</td>
<td>96%</td>
</tr>
</tbody>
</table>

† JAMA. 2007;298(18):2155-2163
* CDC (NNDSS, ABCs/EIP Network, NVSN)
Incidence of Invasive Pneumococcal Disease (IPD) in Children <5 years old

**Source:** CDC (Active Bacterial Core Surveillance, EIP Network)
Incidence of Invasive Pneumococcal Disease (IPD) in Adults > 65 years old

Source: CDC (Active Bacterial Core Surveillance, EIP Network)
Advisory Committee on Immunization Practices (ACIP)

ACIP Presentation Slides: August 2014 Meeting

August 13, 2014

August 13, 2014

Use of Pneumococcal Vaccines in Adults

- Routine PCV13 use among adults ≥65 years old: summary of evidence, cost-effectiveness, and GRADE conclusions [11 pages]
  Dr Nancy Bennett
  Dr Tamara Pilishvili
- Considerations for PCV13 use among adults and policy options [32 pages]
  Dr Tamara Pilishvili

http://www.cdc.gov/vaccines/acip/meetings/slides-2014-08.html
Product-related issues
Reported NNDSS Pertussis Cases: 1922-2013

SOURCE: CDC, National Notifiable Diseases Surveillance System and Supplemental Pertussis Surveillance System and 1922-1949, passive reports to the Public Health Service
Trends in Pertussis by Age Group

HP2020 Target: 2500

HP2020 Target: 2000

*MMWR 62(52); ND-719-ND-732 (provisional, week 52 2013 NNDSS data)  9-5-14
DTaP Effectiveness (California, 2010\(^1\)) and Tdap Effectiveness (Washington, 2012\(^2\)) by Time Since Last Dose*

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![Graph showing DTaP and Tdap vaccine effectiveness by time since last dose.](image)

2. CDC, unpublished data.

*Accounting for clustering by county and provider.
Effectiveness of maternal pertussis vaccination in England: an observational study

Gayatri Amirthalingam, Nick Andrews, Helen Campbell, Sonia Ribeiro, Edna Kara, Katherine Donegan, Norman K Foy, Elizabeth Miller, Mary Ramsay

Summary

Background In October, 2012, a pertussis vaccination programme for pregnant women was introduced in response to an outbreak across England. We aimed to assess the vaccine effectiveness and the overall effect of the vaccine programme in preventing pertussis in infants.

Methods We undertook an analysis of laboratory-confirmed cases and hospital admissions for pertussis in infants between Jan 1, 2008, and Sept 30, 2013, using data submitted to Public Health England as part of its enhanced surveillance of pertussis in England, to investigate the effect of the vaccination programme. We calculated vaccine effectiveness by comparing vaccination status for mothers in confirmed cases with estimates of vaccine coverage for the national population of pregnant women, based on data from the Clinical Practice Research Datalink.

Findings The monthly total of confirmed cases peaked in October, 2012 (1565 cases), and subsequently fell across all age groups. For the first 9 months of 2013 compared with the same period in 2012, the greatest proportionate fall in confirmed cases (328 cases in 2012 vs 72 cases in 2013, −78%, 95% CI −72 to −83) and in hospitalisation admissions (440 admissions in 2012 vs 140 admissions in 2013, −68%, −61 to −74) occurred in infants younger than 3 months, although the incidence remained highest in this age group. Infants younger than 3 months were also the only age group in which there were fewer cases in 2013 than in 2011 (118 cases in 2011 vs 72 cases in 2013), before the resurgence. 26684 women included in the Clinical Practice Research Datalink had a livebirth between Oct 1, 2012 and Sept 3, 2013; the average vaccine coverage before delivery based on this cohort was 64%. Vaccine effectiveness based on 82 confirmed cases in infants born from Oct 1, 2012, and younger than 3 months at onset was 91% (95% CI 84 to 95). Vaccine effectiveness was 96% (95% CI 82 to 95) when the analysis was restricted to cases in children younger than 2 months.
Estimated Herpes Zoster (Shingles) Vaccination Coverage, Adults aged ≥ 60 years

National Health Interview Survey
Major Supply Constraints in Past 5 Years

- Pentacel combination vaccine shortage: Apr. 2012- May/June 2014
Consumer and Patient-related issues
Measles in the U.S. has reached a 20-year high

Measles, U.S., 2001-2014*
Cumulative Number by Month of Rash Onset

*2014 data reported as of August 29, 2014

*July 2014 data are not complete and reflect reported cases through July 13, 2014
Source: National Notifiable Diseases Surveillance System (NNDSS) and direct report to CDC
Reported Measles Incidence
United States, 1992-2014*

Cases/100,000

Year


Measles elimination declared

1 case/million

*As of September 2, 2014

*YTD

As of September 2, 2014
Provider and system issues
National Vaccination Coverage Levels Adolescents 13-17 Years, NIS-Teen, 2006-2013

MMWR. 2014;63;625-33
Vaccination Coverage, Adolescents 13-15 years, 2006-2013

NIS-Teen

* Target is 90% for 2 doses of varicella; ≥1 HPV is not an HP 2020 objective.
** Baseline for HP 2020.
Actual and potentially achievable vaccination coverage of ≥1 HPV vaccine by age 13 years among adolescent girls if missed opportunities* were eliminated, NIS-Teen 2007-2013 combined

*Missed opportunity defined as having a healthcare encounter where at least one vaccine was administered but HPV was not

MMWR. 2014; 63:620-4
Healthy People 2020 Objective 17.1
Increase percentage of public health providers who have had vaccination coverage levels among children in their practice population measured in the past year

Healthy People 2020 Target
Healthy People 2020 Objective 17.2
Increase percentage of private providers who have had vaccination coverage levels among children in their practice population measured in the past year

Healthy People 2020 Target
IID-18 Increase the percentage of children under the age of 6 years of age whose immunization records are in a fully operational, population-based immunization information system (IIS)
Immunization Information System Executive Board  First meeting held Nov 19, 2013

- Newly chartered inter-governmental board
- Federal, state, and local governmental members
- Provides input to CDC to help update IIS strategic plan
- Helps NCIRD sustain national leadership role in future direction of IIS
- Assists us with development and alignment of strategic initiatives to support goals
- Strengthens links with key governmental stakeholders and enablers (Office of the National Coordinator, CMS, Indian Health Service, cancer registries, etc.)
CDC’s IIS Strategic Plan Focus Areas

- **National leadership**
  - Vision, strategy, policy, standards, accountability, shared services

- **Service Delivery**
  - Provider/patient access & clinical decision support at point of care

- **Capacity & Infrastructure**
  - Immunization programs, informatics, surveillance, coverage

- **Interoperability/data management**
  - Data exchange across information ecosystem, including data quality & semantic interoperability considerations

- **Sustainability**
  - Long-term funding, resources to maintain immunization information management and informatics at a national level
Changes in HP2020 Objectives

• Influenza objectives have been consolidated and data sources updated

• HPV objective for boys has been approved
  – Eventually, aim for HPV objective for all teens (girls and boys)
Summary for 2013/14 HP2020

• Most VPDs low or decreasing
  – Sustained or improved immunization coverage
  – Measles in 2014 and pertussis cycles

• Current barriers and challenges
  – Reducing pertussis deaths through Tdap in pregnancy
  – Intermittent supply shortages
  – Public and provider barriers
    • Measles among selected groups (e.g. Amish)
    • HPV vaccination issues (missed opportunities)
Acknowledgments

Kafayat Adeniyi
Joseph Alcober
Brooke Barry
Amanda Cohen
Rebecca Gold
Marsha Houston
Helen Kuykendall
Karen Mason
Kristin Pope
Sandra Roush
James Singleton
Shannon Stokley
Candice Swartwood
Natarsha Thompson