Current Trends in Immunization

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2011 NCSL Meeting

Objectives

- Review the benefits of immunization
- Discuss where the immunization enterprise stands in protecting
  - Infants
  - Adolescents
  - Pregnant women
- Share how alternate immunization sites might complement the medical home
  - Increasing immunization rates and improving public health outcomes
Objectives

- The benefits of immunization
  - Where does the immunization enterprise stand in protecting
    - Infants
    - Adolescents
    - Pregnant women
  - How alternate immunization sites might complement the medical home
    - Increasing immunization rates and improving public health outcomes

Vaccines Have Transformed the Medical Landscape Over the Course of the 20th and 21st Centuries

Before vaccines parents in the US could expect that...

- Polio would paralyze 10,000 children
- Rubella (German measles) would cause birth defects and mental retardation in as many as 20,000 newborns
- Measles would infect about 4m children, killing 3,000
- Diphtheria would be one of the most common causes of death in school-aged children
- A bacterium called Haemophilus influenzae type b (Hib) would cause meningitis in 15,000 children, leaving many with permanent brain damage
- Pertussis (whooping cough) would kill thousands of infants

Today 12,000 babies will be born in US
- 17 diseases are now vaccine-preventable
Impact of Vaccination on Preventable Diseases
Annual 20th century vs. 2010 reported cases

<table>
<thead>
<tr>
<th>Disease</th>
<th>20th Century Annual Morbidity</th>
<th>2010 Reported Cases</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>63</td>
<td>&gt; 99%</td>
</tr>
<tr>
<td>Mumps</td>
<td>162,344</td>
<td>2,612</td>
<td>98%</td>
</tr>
<tr>
<td>Pertussis</td>
<td>200,752</td>
<td>27,550</td>
<td>86%</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>5</td>
<td>&gt; 99%</td>
</tr>
<tr>
<td>Congenital Rubella Syndrome</td>
<td>152</td>
<td>0</td>
<td>100%</td>
</tr>
<tr>
<td>Tetanus</td>
<td>580</td>
<td>26</td>
<td>96%</td>
</tr>
<tr>
<td>Haemophilus influenzae</td>
<td>20,000</td>
<td>246</td>
<td>99%</td>
</tr>
</tbody>
</table>

Source: CDC, Sep 2011

Routine Childhood Immunization is Cost Saving*
Every dollar spent results in $5.80 in cost savings

<table>
<thead>
<tr>
<th>Vaccines Studied: DTaP, Hib, IPV, MMR, HepB, Varicella, HepA, PCV7 and Rotavirus vaccines</th>
<th>Direct costs (Million $)</th>
<th>Societal costs (Direct+Indirect) (Million $)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Costs averted</td>
<td>$20,284</td>
<td>$76,401</td>
</tr>
<tr>
<td>Program costs</td>
<td>$6,724</td>
<td>$7,514</td>
</tr>
<tr>
<td>Net Present Value (net savings)</td>
<td>$13,560</td>
<td>$68,887</td>
</tr>
</tbody>
</table>

- The routine childhood immunization program prevents . . .
  - 20 million cases
  - 42,000 deaths
  . . . Per birth cohort of ~4 million children

Objectives

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- How alternate immunization sites might complement the medical home
  - Increasing immunization rates and improving public health outcomes

We are very good at immunizing children by age 2
2010 coverage at or near 90% for most routine vaccines

Progress has been made in protecting adolescents
Coverage lags behind infant/toddlers – HPV uptake low

Maternal Immunization
An emerging platform to protect mothers and newborns

- Maternal immunization protects in several ways
  - **Active Immunity:** The mother and unborn child are protected from disease as a result of the mother’s immune response to the vaccine
  - **Passive Immunity:** The newborn baby is protected in the early stages of life through transfer of antibodies from the mother

- Two recommendations are currently in place for routine Maternal Immunization
  - **Influenza** has been in place for decades
  - The recommendation for **TdaP** was introduced in 2011

- Innovative new vaccines are under development for pregnant mothers
Maternal Immunization

**Influenza Recommendation**

- **Influenza**
  - Pregnant women more prone to severe illness from flu and have a greater chance for serious problems for their unborn baby*
  - A recent study concluded that infants of vaccinated mothers were 45-48% less likely to have influenza hospitalizations than infants of unvaccinated mothers**
  - **ACIP recommends immunization for persons who are or will be pregnant during the influenza season.**


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**Pertussis Recommendation**

- **Pertussis**
  - The majority of pertussis-related deaths in the past 30 years occurred in infants 0-1m old*
  - Most transmission of pertussis in newborns is by family members (primarily parents)
  - **ACIP recommends 3rd trimester maternal immunization with TdaP, as well as immunization of close contacts of infants**

Maternal Immunization

Future trends

- Maternal immunization is the best way to protect a child in against diseases in early infancy
  - Difficult to develop vaccines that are effective in protecting children at birth
- Diseases for which maternal immunization is an attractive approach
  - Group B Streptococcus (GBS)
  - Meningococcal Disease
  - Respiratory Syncytial Virus (RSV)

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Alternate Immunization Sites

An tool to reach underimmunized/underserved populations

- Alternate Immunization Sites offer additional, accessible venues for immunization for adolescents and adults
  - All states allow some immunization at Pharmacies
  - School-based immunization programs benefit from a captive audience

- Value of Alternate Sites
  - Increase access to vaccines
  - Opportunity to educate on vaccines and vaccine preventable illness
  - Especially valuable in underpopulated areas and/or those with limited provider availability

- Concern
  - Immunization out of Medical Home will limit doctor/patient contact

Pharmacy Based Immunization

Convenient and accessible

- Pharmacies are increasingly able to offer vaccines
  - 13 States allow pharmacists to provide all vaccine to all age groups
  - 38 States and the District of Columbia have varied age restrictions

- Pharmacy immunization offers benefits . . .
  - Accessibility: widespread and broad open hours
  - Potential to cross check with prescriptions to identify at risk patients and recommended needed vaccines

- . . . And challenges
  - Securing in-network reimbursement from insurers
  - Gaining the support of local physicians and health departments
  - Limited systems to keep records up to date across providers
School-Based Immunization

Provide underserved populations access to vaccine

- A study in NYC evaluating the impact of school based vaccination establishes benefit*
  - Children vaccinated in schools were
    - Less likely to have received a seasonal influenza vaccine in the past than those vaccinated in provider offices
    - Less likely to be up-to-date on routine childhood immunizations

- School-based Immunization has challenges
  - Parental permission must be obtained and brought with the child to school
  - Providers must navigate the sometimes challenging task of obtaining reimbursement from Insurers


Conclusions

- Immunization is a highly effective Public Health intervention, second only to availability of clean water
- In the US, we have made tremendous progress in protecting our young children
- Adolescent immunization rates are increasing, but challenges remain
- Recent recommendations for Maternal Immunization offer an exciting opportunity to protect mothers and newborns
  - Innovative new vaccines for this population are under development
- Alternate Immunization Sites are one tool that can be used to increase access to underimmunized / underserved populations
THANK YOU!

Estimated Vaccination Coverage
Children 19-35 Months, 1967-2009

* Target is 80 percent for Rotavirus and 60 percent for Hepatitis A
** Reflects 3+ doses through 2008; Full Series (3+ or 4+ doses, depending on brand) 2009 and later

Source: CDC, Sep 2011
Estimated Vaccination Coverage
Adolescents 13-15 years, 2006-2010

Healthy People 2020 Target*

*≥1 HPV is not a Healthy People 2020 objective

Source: CDC, Sep 2011