Effective Interventions to Improve Vaccination Coverage in Children, Adolescents, and Adults

Findings and Recommendations from the US Task Force on Community Preventive Services

David Hopkins
Community Guide, CDC

Agenda

- Status of immunization in the US
- What is evidence on effectiveness?
- Evidence; Systematic reviews; and the Community Guide
- Vaccination strategies and Recommendations
- Other Considerations
“...No duty of society, acting through its government agencies, is paramount to this obligation to attack the removable cause of disease. The duty of leading this attack and bringing home to public opinion the fact that the community can buy its own health protection is laid upon all health officers, organization and individuals interested in public health movements.....”

Hermann Biggs
Medical Officer
New York City DOH 1911

Challenges in the United States

- Rapid introduction of new vaccines
- Establishing and maintaining a steady vaccine supply
- Vaccine financing
- Reducing remaining racial/ethnic disparities in coverage
- Effectively addressing fears about vaccine safety

Source (slides 4 and 5): S Cochi, National Immunization Program, CDC, 2005
Vaccine-Specific Coverage Rates Among Pre-school Aged Children in the United States

DTP(3+) is not a Healthy People 2010 objective. DTP(4) is used to assess Healthy People 2010 objectives.

Note: Children in the USIS and NHIS were 24-35 months of age. Children in the NIS were 19-35 months of age.


Still A Lot of Room for Improvement among Adults (2005)

**Influenza**
- 18-49 yrs with high risk conditions: 18%
- 50-64 yrs old: 34%
- HP 2010 objective: 60%

**Pneumococcal**
- 18-49 yrs with high risk conditions: 15%
- 50-64 yrs old: 31%
- HP 2010 objective: 60%

What is Evidence on Effectiveness?

“Evidence” in Public Health

- A wild guess
- An educated guess
- Word of mouth (what others are doing)
- Case report (before-after experience)
- A scientific trial
  - One group gets the intervention
  - A second group acts as a comparison
- A narrative review of related studies
- A systematic review
A Lot of People are Doing a lot of Work

The Practice of Immunization
(What people, groups, and programs are doing now in communities, schools, worksites, health care systems)

Differences in:
- Support
- Focus
- Partners
- Activities

Some of This Work Gets Evaluated

The Practice of Immunization
(What people, groups, and programs are doing now in communities, schools, worksites, health care systems)

Published Evaluations of Interventions (studies)

Differences in:
- Intervention
- Outcomes
- Settings
- Study Design
- Study Quality

Differences in:
- Support
- Focus
- Partners
- Activities
Systematic Reviews Can Help to Sort Things Out

The Practice of Immunization
(What people, groups, and programs are doing now in communities, schools, worksites, health care systems)

Differences in:
- Support
- Focus
- Partners
- Activities

Published Evaluations of Interventions (studies)

A Systematic Review

A Body of Evidence

Differences in:
- Intervention
- Outcomes
- Settings
- Study Design
- Study Quality

Trickle-Down Evidence, Trickle-Up Advice

The Practice of Immunization
(What people, groups, and programs are doing now in communities, schools, worksites, health care systems)

Differences in:
- Support
- Focus
- Partners
- Activities

Published Evaluations of Interventions (studies)

A Systematic Review

A Body of Evidence

Recommendations
- It Works
- We Can’t Tell
- Doesn’t Work

It Works
Doesn’t Work
We Can’t Tell
The Community Guide

- An independent US Task Force
- A method for conducting systematic reviews
- A focus on population-based interventions
  - Communities
  - Health care systems
- Evidence-based conclusions and recommendations regarding use

Issues Considered in Community Guide Reviews

- Intervention
- Effective across the body of evidence?
- Applicable to “my” population?
- Reduced Morbidity and Mortality
- Intended Outcomes
- Other Benefits?
- Potential Harms?
- Additional Information
- Barriers to Intervention Implementation?
Evidence on Effectiveness of Interventions to Improve Vaccination Coverage

Recommendations regarding Use of Interventions appropriate for Communities and Healthcare Systems

Our Conceptual Approach: Target and Goals
Important Intermediate Steps

- Population
- Increase Vaccination Opportunities
- Vaccination Coverage
- Reduce VPD
- Reduce Morbidity and Mortality

Strategic Approaches Considered

- Increase Demand
- Enhance Access
- Provider / System Interventions
- Population
- Increase Vaccination Opportunities
- Vaccination Coverage
- Reduce VPD
- Reduce Morbidity and Mortality
Strategies and Issues Not Included in this Review

- Increase Demand
- Enhance Access
- Provider / System Interventions
- Population
  - Increase Vaccination Opportunities
  - Vaccination Coverage
  - Reduce VPD
  - Reduce Exposures to VPD
  - Reduce Exposures

- Environment
- Refusers

Treatment of VPD
- Reduce Morbidity and Mortality

Issues Considered in the VPD Reviews

- Intervention
- Barriers:
  - (Costs)
  - Infrastructure
  - Burden
- Effective across the body of evidence?
- Applicable to “my” population?
- Additional Information
- Benefits of Intervention
- Harms of Intervention
- Reduced Morbidity and Mortality Due to Vaccine Preventable Diseases
- ?
- ?
Recommendations from the Task Force on Community Preventive Services

Interventions to Increase Vaccination Coverage in Children, Adolescents, and Adults

Interventions to Increase Client and Community Demand for Vaccinations

<table>
<thead>
<tr>
<th>Intervention Reviewed</th>
<th># Studies</th>
<th>Task Force Finding</th>
</tr>
</thead>
<tbody>
<tr>
<td>Client reminder / recall</td>
<td>42</td>
<td>Recommended—Strong</td>
</tr>
<tr>
<td>Education when combined with other Interventions</td>
<td>17</td>
<td>Recommended—Strong</td>
</tr>
<tr>
<td>Vaccination requirements for childcare, school, college</td>
<td>9 (3)</td>
<td>Recommended—Sufficient</td>
</tr>
<tr>
<td>Community education when implemented alone</td>
<td>1</td>
<td>Insufficient Evidence</td>
</tr>
<tr>
<td>Clinic-based education when implemented alone</td>
<td>3</td>
<td>Insufficient Evidence</td>
</tr>
<tr>
<td>Client or family incentives</td>
<td>3</td>
<td>Insufficient Evidence</td>
</tr>
<tr>
<td>Client-held medical records</td>
<td>4</td>
<td>Insufficient Evidence</td>
</tr>
</tbody>
</table>
### Interventions to Enhance Access to Vaccination Services

<table>
<thead>
<tr>
<th>Intervention Reviewed</th>
<th># Studies</th>
<th>Task Force Finding</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reducing client out-of-pocket costs</td>
<td>19 (14)</td>
<td>Recommended—Strong</td>
</tr>
<tr>
<td>Expanding access in health care settings when combined with other interventions</td>
<td>15</td>
<td>Recommended—Strong</td>
</tr>
<tr>
<td>Vaccination programs in US WIC settings</td>
<td>4</td>
<td>Recommended—Sufficient</td>
</tr>
<tr>
<td>Home Visits for vaccinations</td>
<td>7</td>
<td>Recommended—Sufficient</td>
</tr>
<tr>
<td>Vaccination programs in schools</td>
<td>9 (2001)</td>
<td>Recommended—Sufficient</td>
</tr>
<tr>
<td>Vaccination programs in childcare centers</td>
<td>0</td>
<td>Insufficient Evidence</td>
</tr>
<tr>
<td>Expanding access in health care settings alone</td>
<td>2</td>
<td>Insufficient Evidence</td>
</tr>
</tbody>
</table>

### Provider-based Interventions to Increase Vaccinations

<table>
<thead>
<tr>
<th>Intervention Reviewed</th>
<th># Studies</th>
<th>Task Force Finding</th>
</tr>
</thead>
<tbody>
<tr>
<td>Provider Reminder / Recall</td>
<td>29</td>
<td>Recommended—Strong</td>
</tr>
<tr>
<td>Provider Assessment and Feedback</td>
<td>14</td>
<td>Recommended—Strong</td>
</tr>
<tr>
<td>Standing Orders for Adult Clients</td>
<td>10</td>
<td>Recommended—Sufficient</td>
</tr>
<tr>
<td>Standing Orders for Children</td>
<td>0</td>
<td>Insufficient Evidence</td>
</tr>
<tr>
<td>Provider Education when implemented alone</td>
<td>4</td>
<td>Insufficient Evidence</td>
</tr>
</tbody>
</table>
An Example of Review Findings

- **Client Reminder / Recall**
  - Prompts to clients that their vaccinations are due or overdue
    - Mail (letters, postcards)
    - Telephone
  - Registry systems can be used to identify and generate reminders

Impact on Vaccination Coverage

- **42 included studies**
  - 31 study arms when implemented alone
    - Median change: +8 pct points across baseline coverage of 4% to 94%
  - 23 study arms when combined with other interventions
    - Median change: +16 pct points across baseline coverage rates of 5% to 89%
Additional Information

- Applicability: Interventions were effective in a variety of settings, and populations, and for most vaccines
  - Across a range of baseline coverage
  - For children and adults
  - (No studies of adolescents/ Hepatitis B)
- Benefits/Harms: No information
- Barriers: Infrastructure; Burden

Task Force Recommendation

- Client reminder/recall interventions are recommended on the basis of strong scientific evidence that they improve vaccination coverage 1) in children and adults, 2) in a range of settings and populations, 3) when applied at different levels of scale from individual practice settings to entire communities; 4) across a range of intervention characteristics (e.g. reminder or recall, content, theoretical basis and method of delivery); and (5) whether used alone or as part of multicomponent intervention.
## Additional Considerations

### Interventions in Combination

#### A Menu Recommendation*

<table>
<thead>
<tr>
<th>Enhancing Access (one or more)</th>
<th>Provider-based Interventions (one or more)</th>
<th>Increase Client Demand (one or more)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expanded Access in Healthcare Settings</td>
<td>Standing Orders</td>
<td>Client Reminders</td>
</tr>
<tr>
<td>Reduced Patient Out-of Pocket Costs</td>
<td>Provider Reminders</td>
<td>Client Education</td>
</tr>
<tr>
<td>Assessment &amp; Feedback</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Task Force review of interventions to improve influenza, pneumococcal, and hepatitis B vaccination coverage among high-risk adults (2005)
Limits of Community Guide Reviews and Recommendations

- Recommendations do not replace the need for local assessments of community priorities and resources
- Reviews provide:
  - options to health systems and public health programs in building more comprehensive programs
  - evidence to advocate for change
  - evidence to defend decisions made

Conclusions

- There are a number of effective interventions to improve vaccination coverage
- Education alone (for clients or providers) is probably not enough
- Combinations of interventions may be more effective than single interventions
- These reviews are now being updated to incorporate new studies
For More Information

- Website
  www.thecommunityguide.org

- David Hopkins
  Community Guide Staff, CDC
dhh4@cdc.gov

Discussion
Additional Slides

Scatterplot of Study Findings from the High Risk Review Leading to Menu Recommendation from the Community Guide Task Force