The Guide to Community Preventive Services
THE COMMUNITY GUIDE
What Works to Promote Health

# Increasing Appropriate Vaccination: Health Care System-Based Interventions Implemented in Combination (2010 Archived Review)

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# Review Summary

## Intervention Definition

Health care system-based interventions implemented in combination involve the use of two or more coordinated interventions to increase vaccination rates within a targeted population. Interventions are implemented primarily in health care settings, although efforts may include additional activities within the community.

The selection and implementation of coordinated interventions may result from an overall quality improvement effort in a health care setting.

## Summary of Task Force Finding

The Community Preventive Services Task Force recommends health care system-based interventions implemented in combination on the basis of strong evidence of effectiveness in increasing vaccination rates in targeted client populations.

The Task Force further recommends the:

Combination of at least one intervention to increase client demand for vaccinations:

- Client reminder and recall systems
- Clinic-based client education
- Manual outreach and tracking

With one or more interventions that address either or both of the following strategies:

- Interventions to enhance access to vaccinations:
  - Expanded access in health care settings
  - Reduced client out-of-pocket costs
  - Home visits
- Interventions directed at vaccination providers or systems:
  - Provider reminders
  - Standing orders
  - Provider assessment and feedback

The interventions listed as examples for each strategy were those that showed the greatest effect on vaccination rates.

## About the Intervention

Combinations of interventions to increase vaccination rates in health systems included 2 or more of the following interventions:

Strategy: Interventions to increase community demand for vaccinations:

- Client or family incentive rewards
- Client reminder and recall systems
- Client-held paper immunization records

- Clinic-based client education
- Manual outreach and tracking

Strategy: Interventions to enhance access to vaccination services:

- Expanded access in healthcare settings
- Home visits
- Reduced client out-of-pocket costs

Strategy: Interventions directed at vaccination providers or systems:

- Provider assessment and feedback
- Provider education
- Provider reminders
- Standing orders

## Results from the Systematic Review

This Task Force finding updates and replaces previous Task Force findings on Multicomponent Interventions for Expanding Access in Healthcare Settings and Multicomponent Interventions that Include Education (Briss et al., 2000).

The finding is based on evidence from 62 studies with 74 study arms (search period January 1980-November 2009). Most of the studies evaluated combinations of two or three different interventions.

- Overall change in vaccination rates from the combination of at least two interventions: absolute median increase of 8.0 percentage points (interquartile interval [IQI]: 4 to 21 percentage points; 56 studies, 68 study arms)
    - Increases in vaccination rates were larger when implemented in settings with low rates at baseline.
- Change in vaccination rates from the combination of at least one intervention each from two different strategies, or from all three strategies: absolute median increase of 16.0 percentage points (IQI: 6 to 26 percentage points; 36 studies, 42 study arms)
- Health care system-based efforts were effective in increasing vaccination rates when implemented in a range of clinical settings, communities, and client populations.
- Combined approaches were effective when delivered to both young children (childhood series, and influenza vaccinations) and older adults (influenza and pneumococcal vaccinations).
- Information on implementation in rural settings was limited and only one of the studies evaluated interventions targeted at adolescents.

## Economic Evidence

Two studies qualified for the review, however the information available provides an incomplete assessment of the costs and benefits.

## References

Briss PA, Rodewald LE, Hinman AR, et al. Reviews of evidence regarding interventions to improve vaccination coverage in children, adolescents, and adults. *Am J Prev Med* 2000;18(1S):97-140.

# Task Force Finding and Rationale Statement

## Intervention Definition

Health care system-based interventions implemented in combination involve the use of two or more coordinated interventions to increase vaccination rates within a targeted client population. Interventions are implemented primarily in health care settings, although efforts may include additional activities within the community. Specific interventions may include client reminder and recall systems; clinic-based client education; expanded access in health care settings; provider assessment and feedback; provider reminders; and standing orders. The selection and implementation of coordinated interventions may result from an overall quality improvement effort in a health care setting.

## Task Force Finding (December 2010)

The Community Preventive Services Task Force recommends health care system-based interventions implemented in combination on the basis of strong evidence of effectiveness in increasing vaccination rates in targeted client populations.

Based on findings from 36 of the 62 included studies, the Task Force further recommends the:

Combination of at least one intervention to increase client demand for vaccinations:

- Client reminder and recall systems
- Clinic-based client education
- Manual outreach and tracking

With one or more interventions that address either or both of the following strategies:

- Interventions to enhance access to vaccinations:
  - Expanded access in health care settings
  - Reduced client out-of-pocket costs
  - Home visits
- Interventions directed at vaccination providers or systems:
  - Provider reminders
  - Standing orders
  - Provider assessment and feedback

The interventions listed as examples for each strategy were those that showed the greatest effect on vaccination rates.

## Rationale

### Basis of Finding

The Task Force considered evidence from 62 studies with 74 study arms (search period January 1980-November 2009). Fifty-six of the included studies (68 study arms) provided a common measure of change in vaccination rates; the median absolute change was an increase of 8 percentage points (interquartile interval: 4 to 21 percentage points). In general,

changes in vaccination rates were greater in magnitude when interventions were implemented in settings with low baseline rates.

The included studies evaluated a variety of interventions in different combinations. The Task Force examined the evidence of differences attributable to specific interventions and combinations of interventions using different strategic approaches. These strategic approaches were:

1. Interventions to increase client demand (client reminder and recall systems, clinic-based client education, client or family incentives, client-held paper immunization records, case management, and manual outreach and tracking);
2. Interventions to enhance access to vaccination services (expanded access in health care settings, reduced client out-of-pocket costs, and home visits); and
3. Interventions directed at vaccination providers (provider reminder systems, standing orders, provider assessment and feedback, provider education, and provider incentives).

The most common individual interventions implemented in a combined approach were client reminder and recall systems (32 study arms) and provider reminders (30 study arms).

Thirty-six studies (42 study arms) evaluated the combination of interventions across two or three of the strategic approaches; the median absolute change was an increase of 16 percentage points (interquartile interval: 6 to 26 percentage points). In 26 study arms, interventions were combined within only one strategic approach; the median absolute change was an increase of 4 percentage points (interquartile interval: 2 to 9 percentage points).

Nine studies evaluated combinations of interventions implemented as a part of a health care system quality improvement effort. The most commonly implemented interventions were those directed at vaccination providers: provider education, provider reminders, and provider assessment and feedback. The studies included in this evaluation were typically short in duration and reported mixed results.

The included evidence did not demonstrate a consistent effect on change in vaccination rates based on the total number of interventions implemented. The studies evaluated a range of two to nine interventions within and across strategies. The majority of the studies implemented two (31 study arms) or three (18 study arms) interventions.

### Applicability and Generalizability Issues

Overall, the included studies provided evidence of effectiveness for intervention combinations implemented in a range of clinical settings and communities, although evidence from rural settings was limited. Studies also demonstrated effectiveness across a range of client populations and vaccinations, including young children (childhood series, influenza) and older adults (influenza, pneumococcal, and tetanus vaccines). Only one of the included studies evaluated interventions targeted at increasing vaccination rates among adolescents. Most of the included evidence evaluated coordinated interventions implemented in settings with low to moderate baseline vaccination rates, and findings are most applicable to these situations. Finally, the included studies demonstrated increases in vaccination rates for populations of low socioeconomic status (21 study arms) and across a range of racial and ethnic groups.

### Data Quality Issues

Of the 47 included studies, 32 were randomized controlled trials, 3 were non-randomized comparative studies, and 12 were single group (non-comparative) studies. The most common limitations affecting this body of evidence were poor

descriptions of the study populations, intervention programs, and their components; problems with data measurement or interpretation; and high dropout rates. While half the studies (24) analyzed all enrolled participants, nine had more than 20% drop-out (or loss-to-follow-up) rates. Eleven studies, including the DPP study, had no important limitations.

### Other Benefits and Harms

Coordinated efforts to increase the receipt of recommended vaccinations may increase contact between health care providers and their clients, allowing for opportunities to deliver other clinical care or preventive services. No harms specific to particular intervention combinations were identified in this review.

### Economic Evidence

The Task Force identified only two studies providing economic information for health system-based interventions implemented in combination. The available information provides an incomplete assessment of the costs and benefits associated with these multicomponent efforts. Additional research is needed to address the gaps in economic information.

### Considerations for Implementation

In a concurrent review, the Task Force also examined the evidence on effectiveness of interventions when coordinated across community settings. The included studies typically involved partnerships between community organizations and vaccination providers and attempted to increase vaccinations in populations with low rates of coverage. With studies providing strong evidence on effectiveness in increasing vaccination rates in targeted populations, the Task Force also recommends community-based interventions when implemented in combination. Taken together, these reviews and recommendations provide a range of options for decision-makers to consider in the selection and coordination of interventions to meet local needs and resources.

### Evidence Gaps

The Task Force encourages additional implementation research to determine the effectiveness of implementing health care system-based interventions in combination in rural settings and for vaccinations recommended for adolescents. Future research on quality improvement activities in these settings should incorporate study periods sufficient to evaluate continuous quality improvement efforts.

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## Disclaimer



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