Implementation strategies to improve vaccination

Meera Varman MD
Professor
Pediatric Infectious Diseases
Creighton University

Disclosures

• Grant/Research Funding for clinical trials
  • GSK, Merck, Novartis, Sanofi-Pasteur, Pfizer, Regeneron, Medimmune
  • Speakers bureau for Pfizer
  • Vaccine advisory committee Sequirus
Objectives

- Develop a **strategy** for improving delivery of immunizations
- **Apply** the Model for Improvement to test changes
- Implement a **measurement** strategy to monitor changes made

![Graph showing reported measles incidence in the United States, 1992-2007.](image)
Europe's Measles Cases Tripled Last Year
Measles cases reported in the WHO European Region in 2017 & 2018

<table>
<thead>
<tr>
<th>Country</th>
<th>2017</th>
<th>2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ukraine</td>
<td>4,782</td>
<td>53,218</td>
</tr>
<tr>
<td>Serbia</td>
<td>702</td>
<td>5,076</td>
</tr>
<tr>
<td>Israel</td>
<td>16</td>
<td>2,919</td>
</tr>
<tr>
<td>France</td>
<td>518</td>
<td>2,913</td>
</tr>
<tr>
<td>Italy</td>
<td>5,393</td>
<td>2,517</td>
</tr>
<tr>
<td>Russia</td>
<td>897</td>
<td>2,256</td>
</tr>
<tr>
<td>Georgia</td>
<td>96</td>
<td>2,203</td>
</tr>
<tr>
<td>Greece</td>
<td>1,067</td>
<td>2,193</td>
</tr>
<tr>
<td>Albania</td>
<td>12</td>
<td>1,466</td>
</tr>
<tr>
<td>Romania</td>
<td>9,072</td>
<td>1,087</td>
</tr>
</tbody>
</table>

Total measles cases

2017: 25,863
2018: 82,596
"Vaccine-preventable diseases including measles and diphtheria are on the rise, with measles cases up by 30 percent worldwide."

Reported Measles Cases in the U.S., January 1–April 26, 2019
How to Increase immunization rate!!

The starting point for improvement is to recognize the need. — Masaaki Imai

Strategies to increase immunization

- Standing order
- Team
- Reminder recall
- PDSA
- Strong provider recommendation
- Communication
- Education
- NEIIS
- Missed opportunity
Review every chart at every visit

- Assign someone to screen the vaccine record
- Flag the chart for incomplete immunization
- Vaccine champion in clinic

Everyone plays a part

- A culture of immunization starts at the front desk and extends into the waiting room, into the exam room, and finally to the check out desk.

- Everyone plays a part:
  - Receptionists and other support staff
  - Nurses and nurse practitioners
  - Physicians and physician assistants
  - Medical assistants
  - Office manager
  - Vaccine coordinator
PDSA

Form for planning a PDSA cycle supports prediction and keeping one step ahead

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**MODEL FOR IMPROVEMENT**

Objective for this PDSA Cycle

**PLAN**

 QUESTIONS:

 PREDICTIONS:

 PLAN FOR CHANGE OR TEST: WHO, WHAT, WHEN, WHERE

 PLAN FOR COLLECTION OF DATA: WHO, WHAT, WHEN, WHERE

**DO**: CARRY OUT THE CHANGE OR TEST; COLLECT DATA AND BEGIN ANALYSIS.

**STUDY**: COMPLETE ANALYSIS OF DATA; SUMMARIZE WHAT WAS LEARNED.

**ACT**: ARE WE READY TO MAKE A CHANGE? PLAN FOR THE NEXT CYCLE.

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**Nine categories of implementation strategies**

1. Evaluation and iterative strategies
   - Assess for readiness
   - Identify barriers and facilitators
   - Audit & feedback

2. Interactive assistance
   - Facilitation
   - Technical assistance
   - Clinical supervision

3. Adapting and tailoring to context
   - Tailor strategies
   - Promote adaptability
   - Use data experts

4. Develop stakeholder relationships
   - Identify and prepare champions
   - Form local opinion leaders
   - Build coalitions

5. Train/educate stakeholders
   - Conduct ongoing training
   - Develop educational materials
   - Create learning collaborative

6. Supporting clinicians
   - Remind clinicians
   - Develop resource sharing agreements
   - Revise professional roles

7. Engage consumers
   - Involve consumers and family members
   - Intervene to enhance uptake and adherence
   - Use mass media

8. Use financial strategies
   - Access new funding
   - Alter incentive/allowance structures
   - Develop disincentives

9. Change infrastructure
   - Mandate change
   - Change physical structures
   - Start dissemination organization

Waltz, et al., 2015,115
Workflow to overcome barriers

Assess
• ACIP recs
• Pt Immunization Needs
• Reminders

Recommend
• Eligible vaccines
• EMR best practice alert

Administer
• Standing order
• Same day

Document
• Registry

Implementation of change

• Challenges
  • Leadership support-lacking
  • Inadequate planning
  • Insufficient monitoring of outcome

• Best Practice
  • Data to support strong case
  • Contact Successful candidate
  • Roles and responsibilities
  • Communicate/ sustain momentum
Reduced dz burden and cost
Impacts health outcome: Less health care utilization
Improves population health
Reminder recall

**FIGURE 1**—Percentages of patients aged 11–18 years who received an additional needed adolescent vaccine at 4, 12, and 24 weeks: Text4Health–Adolescents, New York City, 2009.

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HPV 3 dose completion at CU CP clinic before and after intervention Aug 2015–April 2016—by Colby Sharlan M3

<table>
<thead>
<tr>
<th>Zip Code</th>
<th>August</th>
<th>April</th>
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<tr>
<td>68102</td>
<td>50.0%</td>
<td>50.0%</td>
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<tr>
<td>68104</td>
<td>45.8%</td>
<td>47.2%</td>
</tr>
<tr>
<td>68105</td>
<td>49.5%</td>
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</tr>
<tr>
<td>68106</td>
<td>45.7%</td>
<td>44.4%</td>
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<tr>
<td>68107</td>
<td>40.7%</td>
<td>47.6%</td>
</tr>
<tr>
<td>68108</td>
<td>39.5%</td>
<td>45.1%</td>
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<tr>
<td>68110</td>
<td>47.5%</td>
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<td>68111</td>
<td>51.7%</td>
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<td>68112</td>
<td>43.3%</td>
<td>44.4%</td>
</tr>
<tr>
<td>68114</td>
<td>52.6%</td>
<td>58.8%</td>
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<tr>
<td>68131</td>
<td>47.6%</td>
<td>45.7%</td>
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<tr>
<td>68134</td>
<td>43.5%</td>
<td>47.7%</td>
</tr>
<tr>
<td>68147</td>
<td>50.0%</td>
<td>54.5%</td>
</tr>
</tbody>
</table>

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**Plan**

**Do**

**Study**

**Act**
HPV vaccination in pediatric clinic based on Zip code

<table>
<thead>
<tr>
<th>INSURANCE</th>
<th>AUGUST 2015</th>
<th>APRIL 2016</th>
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<tbody>
<tr>
<td><strong>FEMALES</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Medicaid</td>
<td>55.4%</td>
<td>58.0%</td>
</tr>
<tr>
<td>Non-Medicaid</td>
<td>43.6%</td>
<td>46.6%</td>
</tr>
<tr>
<td>No Insurance</td>
<td>32.1%</td>
<td>40.8%</td>
</tr>
<tr>
<td><strong>MALES</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Medicaid</td>
<td>43.8%</td>
<td>47.7%</td>
</tr>
<tr>
<td>Non-Medicaid</td>
<td>34.8%</td>
<td>36.8%</td>
</tr>
<tr>
<td>No Insurance</td>
<td>20.5%</td>
<td>27.4%</td>
</tr>
</tbody>
</table>

Why standing order?

- Are endorsed by major vaccine policy-making institutions
- Reduce missed opportunities for vaccinating patients
- Improve vaccine coverage levels in a variety of settings
- Empower staff
- Provide more efficient use of clinician expertise
- Reduce vaccine administration errors by routinizing process, rather than ad hoc implementation
- Protect your patients and community from vaccine preventable diseases

www.immunize.org/catg.d/s8020.pdf
Missed opportunity
Why do Missed Opportunities Occur?

• Provider is not aware that the patient is **due/eligible** for an immunization
• **Practice’s Policy** does not lead to vaccination
• Provider does not follow only **true** contraindications
• Vaccination records—not easily **accessible** to facilitate rapid review of vaccination status.

Opportunity to vaccinate

**Consider every patient encounter an opportunity to vaccinate:**
- Acute care visits
- Well visits
- Sports and camp physicals
- Routine visits for chronic illness
- Visits for influenza vaccine

**Remember:** You’re not done if you give just one!
According to the Centers for Disease Control and Prevention, if health care providers increase HPV vaccination rates in eligible recipients to 80%, it is estimated that an additional 53,000 cases of cervical cancer could be prevented during the lifetime of those younger than 12 years (29). Furthermore, for every year that the vaccination rate does not increase, an additional 4,400 women will develop cervical cancer...”

Committee report ACOG 2017ACOG

Standing orders
http://www.immunize.org/standing-orders/
Why Standing orders are not used

- Lack of standing orders implementation may be due to:
  - Weak or no organizational support
  - Gaps in education, training, perceived benefits
  - Small size of the clinical support staff relative to providers
  - Logistical and workload concerns
  - Concerns about legal ramifications

https://www.thecommunityguide.org/findings/vaccination‐programs‐standing‐orders

Components of standing order

- 1. Assess the need for vaccination
- 2. Screen for precaution and contraindication
- 3. Vaccine information form-VIS
- 4. Right product, needle size, amount
- 5. Guidance-right pt, vaccine, age, dose, route, site
- 6. Document
Communication

- Provide information in different languages
- Address immigrant populations
  - Linguistics
  - Cultural
  - System barriers
  - Patterns of decision making

The AAA Approach

1. Ask
2. Acknowledge
3. Advise

Vax Northwest 2015
HPV provider message

• Physicians’ can use specific messages to motivate parents about HPV vaccine.

"Your child is going to get 3 vaccines today:
To prevent meningitis
To prevent cancer
&
To prevent pertussis

Bundle it
Strong VACCINE recommendations

Announce “Well, we have to do some shots”

Presumptive vs Participatory

Conversation “What do you want to do about shots?”

https://www.cdc.gov/vaccines/hcp/conversations/index.html

75 clinic visits with 19 physicians in 14 states. Sturm et al., 2017. J. Adol Health
Vaccine Apps and reminder programs

Vaccine on the go

Text4baby

VAK (Vaccine Adherence for kids)

Vaccine hand book

Immunization Action Coalition

Ask the Experts
Experts from the CDC Answer Questions About Vaccines

- WHAT'S NEW?
- Chickenpox
- Combination Vaccines
- Diphtheria
- Hib
- Hepatitis A
- Hepatitis B
- HPV
- Influenza
- MMR
- Meningococcal
- Pertussis
- Pneumococcal
- Polio
- Rabies
- Rotavirus
- Tetanus
- Zoster
2020 Goal NE DHHS data Teen

Estimated vaccination coverage among adolescents aged 13-17 years in Nebraska

<table>
<thead>
<tr>
<th>Vaccine</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>Healthy People 2020 Target</th>
</tr>
</thead>
<tbody>
<tr>
<td>22 VAR</td>
<td>86.7</td>
<td>86.8</td>
<td>80.2</td>
<td></td>
</tr>
<tr>
<td>21 Tdap</td>
<td>86.7</td>
<td>86.8</td>
<td>80.2</td>
<td></td>
</tr>
<tr>
<td>21 MenACWY</td>
<td>86.7</td>
<td>86.8</td>
<td>80.2</td>
<td></td>
</tr>
<tr>
<td>UTD HPV Female*</td>
<td>45.1</td>
<td>54.0</td>
<td>62.4</td>
<td></td>
</tr>
<tr>
<td>UTD HPV Male*</td>
<td></td>
<td></td>
<td></td>
<td>62.4</td>
</tr>
<tr>
<td>21 HPV Females**</td>
<td></td>
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Source: National Immunization Survey - Teen (NIS-Teen)


Healthy People 2020 Goal

National Immunization Rates Still Need Improvement

Some Immunization Rates* Are Below Healthy People 2020 Goals1-4

<table>
<thead>
<tr>
<th>Vaccine</th>
<th>Children (by age 19-35 months)</th>
<th>Adolescents (by age 13-15 years)</th>
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<tbody>
<tr>
<td>RotaVax</td>
<td>85%</td>
<td>97%</td>
</tr>
<tr>
<td>Hep B</td>
<td>93%</td>
<td>96%</td>
</tr>
<tr>
<td>MMR</td>
<td>97%</td>
<td>97%</td>
</tr>
<tr>
<td>Varicella</td>
<td>99%</td>
<td>99%</td>
</tr>
<tr>
<td>Hep A</td>
<td>99%</td>
<td>99%</td>
</tr>
<tr>
<td>Pneumococcal</td>
<td>98%</td>
<td>98%</td>
</tr>
<tr>
<td>Hib</td>
<td>95%</td>
<td>95%</td>
</tr>
<tr>
<td>HPV (girls)</td>
<td>90%</td>
<td>90%</td>
</tr>
<tr>
<td>HPV (boys)</td>
<td>93%</td>
<td>93%</td>
</tr>
</tbody>
</table>

Healthy People 2020 has numerous immunization goals
- Healthy People provides science-based, 10-year national objectives for improving the care of all Americans5
- Overall Goal for Immunization: Increase immunization rates and reduce preventable infectious diseases5

*Immunization coverage rates are the percentage of persons who have completed the recommended series of doses for each vaccine.

Healthy People 2020 Goal NE DHHS data Teen

Healthy People 2020 Goal

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Ways to Improve

- Maximize **opportunities** to immunize
- Provide **convenient** office hours
- Revise office **scheduling**
- Use **standing orders**
- Educate staff on **contraindications**
- Review office policy on parental **consent**
- Use an immunization information system (IIS)
- **Appropriate medical record** keeping practices

10 Ways to Create a Culture of Immunization

1. Make parents aware of our immunization philosophy and policy.
2. Keep up to date on current CDC vaccine recommendations.
3. Make clinical resources readily available to staff.
4. Assess a child’s immunization status at **every** visit.
5. Give strong recommendations for immunization.
6. Help parents feel supported by welcoming questions and knowing how to answer them.
7. Give Vaccine Information Statements (VIS) and handouts to answer specific questions.
8. Make immunization resources easy for parents to find.
9. Schedule follow-up immunization appointments before the child leaves the office.
10. Remind parents about upcoming immunization appointments and contact those who miss appointments.
Other resources for healthcare professionals

- CDC immunization training: [https://www.cdc.gov/vaccines/ed/index.html](https://www.cdc.gov/vaccines/ed/index.html)

Take home message

- Form a team
- Do the baseline assessment
- Implement a change
  - Avoid missed opportunities
  - Standing orders
  - Vaccinate all ages
  - Complete the series
  - Reminder recall
- Follow data in 6 months
- Repeat the cycle

If they enter the door don’t miss them

If opportunity doesn’t knock, build a door.

-Milton Berle

www.positivemotivation.net
Wild Poliovirus in June 2019

Circulating vaccine derived poliovirus cases:
- Democratic Republic of the Congo: 1 (4)
- Indonesia: 0 (0)
- Iraq: 0 (0)
- Nigeria: 7 (7)
- Pakistan: 0 (0)
- Papua New Guinea: 0 (0)
- Somalia: 0 (0)

More information:
http://www.poliothisweek.org

*Data as of 29 April 2019, compared to the same point in 2018.

**Total for 2018: Global 103 - DRC 20, Indonesia 1, Mozambique 1, Nigeria 28, Somalia 12.

Be the change you want to see in the world
-Mahatma Gandhi

Increase the vaccination rates