Chapter Quality Network US Immunizations Project | Change Package

American Academy of Pediatrics

Source: American Academy of Pediatrics, Chapter Quality Network (CQN)  Updated February 27, 2019
# Table of Contents

**Acknowledgements and Contributors** | page 3-5  
**About the CQN Project Phase 1** | page 6  
**About the Immunization Change Package** | page 6-9  
  - Figure 1. Phase 1 Top Ten Interventions | page 8  
  - Figure 2. Immunization Change Package Key Drivers | page 9  
**How to Use the Immunization Change Package** | page 10  
  - Figure 3. Institute for Healthcare Improvement Model for Improvement | page 11  
**How to Measure Quality Improvement Efforts** | page 12  
**Immunization Change Package for Clinicians & Care Teams** | page 13-26  
  - Table 1. Immunization Care Change Package – Implement Evidence-Based Guidelines | page 13-14  
  - Table 2. Immunization Care Change Package – Implement Team-Based Care with Informed and Engaged Staff | page 14-19  
  - Table 3. Immunization Care Change Package – Decrease Missed Opportunities to Vaccinate | page 20-23  
  - Table 4. Immunization Care Change Package – Utilize Population Health Strategies | page 24-26  
**References** | page 27-34  
**Appendix A: CQN Immunization Key Driver Diagram** | page 27  
**Appendix B: CQN Immunization Measures Grid** | page 28-29  
**Appendix C: Quality Improvement Glossary** | page 30-32  
**Appendix D: Quality Improvement Resources** | page 33-34  
Source: American Academy of Pediatrics, Chapter Quality Network (CQN)  
Updated February 27, 2019
Acknowledgements & Contributors

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- California Chapter 2, American Academy of Pediatrics
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- Georgia Chapter, American Academy of Pediatrics

Source: American Academy of Pediatrics, Chapter Quality Network (CQN)  Updated February 27, 2019
• Oklahoma Chapter, American Academy of Pediatrics
• New Jersey Chapter, American Academy of Pediatrics
• New York Chapter 2, American Academy of Pediatrics
• American Academy of Family Physicians (AAFP)
• American Academy of Pediatrics (AAP) Pediatric Practice and Healthcare Delivery
• American Academy of Pediatrics (AAP) Childhood Immunization Support Program (CISP)
• American Immunization Registry Association (AIRA)
• California Department of Public Health (EZIZ)
• Centers For Disease Control & Prevention (CDC) National Center for Immunization and Respiratory Diseases (NCIRD)
• Children’s Hospital of Philadelphia (CHOP) Vaccine Education Center
• Community Preventive Services Task Force (CPSTF)
• Dartmouth College
• Immunization Action Coalition (IAC)
• Institute for Healthcare Improvement (IHI)
• National Academy of Medicine (NAM)
• National Institute for Children’s Health Quality (NICHQ)
• National Institutes of Health (NIH)
• Permanente Medical Group, Roseville, California: Kenneth Hempstead, MD, FAAP
• Public Library of Science (PLOS One)
• Vaccine: The official journal of The Edward Jenner Society and The Japanese Society for Vaccinology

Source: American Academy of Pediatrics, Chapter Quality Network (CQN)               Updated February 27, 2019
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About the Chapter Quality Network (CQN) Immunization Project

From March 2017 to February 2018, the American Academy of Pediatrics (AAP) partnered with six AAP state and regional chapters engaged with primary care practice care teams to improve vaccine coverage rates for children age 19-35 months, focusing on combined 7 vaccine series coverage rates and missed opportunities. The network was comprised of 60 practices representing urban, rural, and suburban areas across five states. Practice teams participated in a series of in-person and online learning sessions during which they learned about immunization related clinical content and quality Improvement (QI) methods and tools. Learning sessions were followed by “action periods” during which practices implemented what they learned and tested ways to improve immunization care. Throughout the project, the AAP National Team and the AAP chapter leaders provided direct QI coaching support, clinical expertise, access to a data collection system, and a variety of educational resources. At the conclusion of phase 1, the six Immunization Chapter Leadership Teams submitted feedback on the interventions tested and employed that led to improvement in coverage rates. This feedback across the learning network culminated in a list of “Top Ten” Interventions. This list can be found in Figure 1 on page 8 and resources for each intervention are included in this change package under the appropriate key driver(s).

About the Immunization Change Package

In the United States, childhood immunization programs have led to dramatic declines in the rates of vaccine preventable diseases such as measles, polio, and Haemophilus influenzae serotype b, with significant reductions in morbidity and mortality. Routine childhood immunization in one annual birth cohort of 4 million children in the U.S. prevents about 20 million cases of disease and 42,000 deaths. It also saves around $13.5 billion in direct costs.\(^1\)

However, various barriers and challenges exist for healthcare providers to successfully implement vaccination recommendations. In one Baltimore study, providers missed at least one opportunity to vaccinate 62% of children aged 6-23 months who were due for vaccinations.\(^2\)

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Source: American Academy of Pediatrics, Chapter Quality Network (CQN)  Updated February 27, 2019
The purpose of the Immunization Change Package is to help your practice create reliable processes and systems that enable your team to increase coverage rates by reducing missed opportunities to vaccinate and implementing population health strategies.

The change package is a directory of evidence, best practices, and promising ideas that pediatric and family medicine practices can use as they work to improve immunization care for children and adolescents. The change package is organized by key drivers and interventions. Key drivers are broad, evidence-based actions that can be useful in the development of more specific ideas for changes that lead to improvement. Four evidence-based key drivers are the foundation of the change package (Figure 2). Interventions are specific ideas for changing a process; they can be rapidly tested on a small scale to determine whether they result in improvements in a particular context or environment. Each key driver has several associated interventions. The evidence or practice-based tools and resources are paired with the intervention(s) to which they relate (tables 1-4).³

These tools and resources are meant to be adapted or adopted in your healthcare setting to improve immunization processes. The tools and resources were developed and/or used in the CQN U.S. Immunization Phase I Improvement Project to systematize and improve immunization care; additionally, many of them have been used in other contexts outside of CQN and were recommended for use by experts. Consequently, some clinical details in the tools may reflect office processes and policies that differ from your practice. However, the tools can be adapted based on your specific patient population, patient needs and your environment.

For a visual reference of the change package framework, please refer to the key driver diagram (Appendix A), which shows the causal pathway between the interventions and the global aim of the U.S. Immunization Improvement Project.


Source: American Academy of Pediatrics, Chapter Quality Network (CQN) Updated February 27, 2019
Tables 1-4 include the full list of key drivers, interventions, and resources that practices have successfully implemented to improve immunization care for their 19-35-month patient population. A high-level overview is below.

1. **Use evidence-based guidelines:**
   Office systems for providing optimal immunization care should be based on the most up-to-date clinical guidelines and resources available. Table 1 provides resources on AAP and CDC recommendations and guidelines. Ensuring clinicians and staff are educated on the guidelines is a critical step in improving care. Table 1 provides resources for educating your staff.

2. **Implement team-based care with informed and engaged staff:**
   Team-based care is essential to improving immunization rates. Table 2 provides tools and resources that can be used for onboarding and training new and existing staff. It also includes ideas for sharing responsibilities and accountability across the team to ensure every interaction is an opportunity to reinforce immunizations.

3. **Decrease missed opportunities to vaccinate:**

Source: American Academy of Pediatrics, Chapter Quality Network (CQN)  
Updated February 27, 2019
Table 3 presents successful interventions to assist practices in decreasing missed opportunities to vaccinate.

4. **Utilize population health strategies:**
Regular use and data exchange with the state or regional immunization registry is an important part of practice processes. Table 4 includes tools and resources to improve immunization care by using your state or regional immunization registry (also known as the IIS - Immunization Information Systems).

**Figure 2. Immunization Change Package Key Drivers**

1. Implement Evidence-Based Guidelines
2. Implement Team-based Care with Informed and Engaged Staff
3. Decrease Missed Opportunities to Vaccinate
4. Utilize Population Health Strategies
How to Use the Immunization Change Package

We recommend that a physician champion create an interdisciplinary team (physicians, nurses, medical assistants, practice administrator, etc.) to discuss the aspects of immunization care that are most in need of improvement in your practice. A “current state” workflow or process map can help your team identify areas that need improvement.

Your team will create focus and alignment by answering the three fundamental questions from the Institute for Healthcare Improvement’s Model for Improvement (Figure 2):4

1. What are we trying to accomplish?
2. How will we know that a change is an improvement?
3. What changes can we make that will result in improvement?

The answers will help your team determine quality improvement aims (question 1) and related measures (question 2). Then, you can select specific interventions from the change package (question 3) that your team can test through Plan-Do-Study-Act cycles to see if they help your team accomplish its aim. The change package is meant to be a menu of options from which practices can select specific interventions to improve immunization care. The interventions are not meant to be implemented all at once and not all interventions will be applicable to your clinical setting.4

You can learn more about improvement concepts by referring to the quality improvement glossary (Appendix C).

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Source: American Academy of Pediatrics, Chapter Quality Network (CQN)  Updated February 27, 2019
Figure 3. Model for Improvement

<table>
<thead>
<tr>
<th>What are we trying to accomplish?</th>
<th><strong>AIM:</strong> determine which specific outcomes you are trying to change</th>
</tr>
</thead>
<tbody>
<tr>
<td>How will we know that a change is an improvement?</td>
<td><strong>MEASURES:</strong> identify appropriate measure to track your success</td>
</tr>
<tr>
<td>What change can we make that will result in improvement?</td>
<td><strong>CHANGES:</strong> identify key changes that you will actually test</td>
</tr>
</tbody>
</table>

**MULTIPLE PDSA CYCLES:**
Hunches, theories and ideas for changes that result in improvement

Source: American Academy of Pediatrics, Chapter Quality Network (CQN)

Updated February 27, 2019
How to Measure Quality Improvement Efforts

Monitoring and measuring office processes and outcomes is a critical part of quality improvement work. Overall outcomes, such as improved vaccine coverage rates, are important to measure, but process measures, such as the rate of missed opportunities to vaccinate, can provide much needed information on whether interventions are being implemented consistently and reliably.

The measures set that was developed in the first phase of the CQN U.S. Immunization project is included in Appendix B for reference, adaptation and use in your practice.
# Immunization Change Package for Clinicians and Care Teams

*Note: all links are current as of February 12, 2019.*

## Table 1 | Immunization Change Package

### Key Driver 1: Implement Evidence-Based Guidelines

<table>
<thead>
<tr>
<th>Interventions</th>
<th>Tools &amp; Resources</th>
<th>Where to Access</th>
</tr>
</thead>
<tbody>
<tr>
<td>Utilize the most up-to-date Recommended Immunization Schedule from the AAP and the Advisory Committee on Immunization Practices (ACIP)</td>
<td><strong>CDC: Recommended Immunization Schedule for Children and Adolescents Aged 18 Years or Younger, U.S. 2019</strong>&lt;br&gt;<strong>AAP: Recommendations for Prevention and Control of Influenza in Children, 2018-2019</strong>&lt;br&gt;<strong>AAP: Recommended Childhood and Adolescent Immunization Schedules: United States, 2019</strong></td>
<td><a href="https://www.cdc.gov/vaccines/schedules/hcp/child-adolescent.html">https://www.cdc.gov/vaccines/schedules/hcp/child-adolescent.html</a>&lt;br&gt;<a href="http://pediatrics.aappublications.org/content/142/4/e20182367">http://pediatrics.aappublications.org/content/142/4/e20182367</a>&lt;br&gt;<a href="http://pediatrics.aappublications.org/content/early/2019/02/01/peds.2019-0065">http://pediatrics.aappublications.org/content/early/2019/02/01/peds.2019-0065</a></td>
</tr>
<tr>
<td>Utilize Catch-Up Schedule when appropriate</td>
<td><strong>CDC: Catch Up Guidance Job Aid</strong></td>
<td><a href="https://www.cdc.gov/vaccines/schedules/hcp/ims/catchup.html">https://www.cdc.gov/vaccines/schedules/hcp/ims/catchup.html</a></td>
</tr>
<tr>
<td>Utilize national best practice standards for optimal immunization care</td>
<td><strong>CDC: National Vaccine Advisory Committee (NVAC) Standards for Child and Adolescent Immunization Practices</strong>&lt;br&gt;<strong>CDC: ACIP General Best Practice Guidelines for Immunization</strong>&lt;br&gt;<strong>Community Preventive Services Task Force Community Guide</strong>&lt;br&gt;• Tables providing intervention tools and resources based on evidence of findings to increase vaccination in three categories&lt;br&gt;○ Enhancing access to vaccination services&lt;br&gt;○ Increasing community demand for services&lt;br&gt;○ Provider or system-based interventions</td>
<td><a href="https://www.aap.org/en-us/advocacy-and-policy/aap-health-initiatives/immunizations/Practice-Management/Pages/NVAC-Information.aspx">https://www.aap.org/en-us/advocacy-and-policy/aap-health-initiatives/immunizations/Practice-Management/Pages/NVAC-Information.aspx</a>&lt;br&gt;<a href="https://www.cdc.gov/vaccines/hcp/acip-recs/general-recs/index.html">https://www.cdc.gov/vaccines/hcp/acip-recs/general-recs/index.html</a>&lt;br&gt;<a href="https://www.thecommunityguide.org/content/task-force-findings-increasing-vaccination">https://www.thecommunityguide.org/content/task-force-findings-increasing-vaccination</a></td>
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Source: American Academy of Pediatrics, Chapter Quality Network (CQN)  
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Utilize the most comprehensive information and resources on routinely used vaccines and the diseases they prevent

<table>
<thead>
<tr>
<th><strong>CDC: “Pink Book” 13th Edition, Epidemiology and Prevention of Vaccine-Preventable Diseases</strong></th>
<th><strong>Where to Access</strong></th>
</tr>
</thead>
</table>
| ○ General Recommendations on Immunizations to include:  
- Timing and Spacing of Vaccines  
- Adverse Reactions  
- Contraindications & Precautions  
- Invalid Contraindications  
- Screening for Contraindications and Precautions | https://www.cdc.gov/vaccines/pubs/pinkbook/index.html  
https://www.cdc.gov/vaccines/pubs/pinkbook/genrec.html |

### Table 2 | Immunization Change Package

**Key Driver 2: Implement Team-Based Care With Informed and Engaged Staff**

<table>
<thead>
<tr>
<th><strong>Interventions</strong></th>
<th><strong>Tools &amp; Resources</strong></th>
<th><strong>Where to Access</strong></th>
</tr>
</thead>
</table>
| Provide training tools and resources for office staff to ensure staff is informed, up to date and knowledgeable regarding immunizations | **AAP: Immunization Training Guide**  
| | **AAP: Vaccine Administration Web Pages**  
○ Tables describing the appropriate route for administering each vaccine available | https://www.aap.org/en-us/advocacy-and-policy/aap-health-initiatives/immunization/Pages/vaccine-admin.aspx |

Source: American Academy of Pediatrics, Chapter Quality Network (CQN)  
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<th>Source: American Academy of Pediatrics, Chapter Quality Network (CQN)</th>
<th>Updated February 27, 2019</th>
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<tr>
<td><strong>IAC: Administering Vaccines: Dose, Route, Site, and Needle Size</strong>&lt;br&gt;○ How to administer vaccines (with tables and images) providing information on correct, dose, route, site, and needle length</td>
<td><a href="http://www.immunize.org/catg.d/p3085.pdf">http://www.immunize.org/catg.d/p3085.pdf</a></td>
</tr>
<tr>
<td><strong>IAC: Vaccines with Diluents: How to Use Them</strong>&lt;br&gt;○ How to use diluents: how long they should be stored, and how long after reconstitution they last</td>
<td><a href="http://www.immunize.org/catg.d/p3040.pdf">http://www.immunize.org/catg.d/p3040.pdf</a></td>
</tr>
<tr>
<td><strong>AAP: Practice Transformation Resources</strong></td>
<td><a href="https://www.aap.org/en-us/professional-resources/practice-transformation/Pages/practice-transformation.aspx">https://www.aap.org/en-us/professional-resources/practice-transformation/Pages/practice-transformation.aspx</a></td>
</tr>
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</table>

Create and periodically update process workflow map to establish procedures and identify areas for improvement.
<table>
<thead>
<tr>
<th>Source: American Academy of Pediatrics, Chapter Quality Network (CQN)</th>
<th>Updated February 27, 2019</th>
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</thead>
</table>
| **IHI: Five Steps for Creating Value Through Process Mapping**  
   - IHI is a global leader. Their website includes open sourced resources to aid QI teams | http://www.ihi.org/communities/blogs/5-steps-for-creating-value-through-process-mapping-and-observation |
| **Dartmouth Microsystem Academy: Value Stream Mapping**  
   - Dartmouth Microsystem Academy is a premier training center for quality improvement. Their website includes open sourced resources to aid QI teams. | http://www.clinicalmicrosystem.org/uploads/documents/value_stream_map.doc |
| **IAC: Suggestions to Improve Your Immunization Services** | http://www.immunize.org/catg.d/p2045.pdf |
| **Utilize effective and positive communication strategies to discuss vaccines with hesitant parents** | **AAP: Communicating with Families Web Pages**  
   - Strategies to discuss vaccines, common concerns parents have, how to use vaccine information statements, and how to deal with vaccine refusals | https://www.aap.org/en-us/advocacy-and-policy/aap-health-initiatives/immunizations/Pages/Communicating-with-Families.aspx |
| | **AAP: Risk Communication Videos**  
| | **AAP & CDC: Case Studies on Vaccine Hesitancy**  
   - Case studies present real-life scenarios on vaccine hesitancy | https://www.cdc.gov/vaccines/hcp/conversations/index.html |
| | **AAP: Challenging Cases- Vaccine Hesitancy**  
   - AAP – Pedialink Course - provides strategies to promote vaccine confidence in vaccine-hesitant | https://shop.aap.org/challenging-cases-vaccine-hesitancy/ |
parents in a time efficient but effective manner, including case studies on infant vaccination and MMR vaccination

**CDC: Provider Resources for Vaccine Conversations with Parents**
- Vaccine Information Statements (VISs), vaccine safety and a few other immunization topics as handouts

**IAC: You Must Give Your Patients Vaccine Information Statements (VISs) – It’s Federal Law**
- How the VIS should be used and what the law requires that vaccine providers offer a VIS to parents or those receiving a vaccine

**Parent PACKS Resource: The Children’s Hospital of Philadelphia (CHOP) Vaccine Education Center**
- The Children’s Hospital of Philadelphia (CHOP) Vaccine Education Center has many excellent vaccine resources for parents

**AAP: Immunization Social Media Toolkit**
- The Social Media Toolkit provides information on how to start and use social media accounts and provides sample messages, videos, and resources to share

**NIH: The Architecture of Provider-Parent Vaccine Discussions at Health Supervision Visits**

https://www.cdc.gov/vaccines/hcp/vis/current-vis.html


https://www.chop.edu/centers-programs/parents-pack


https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3838535/

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<tr>
<td>B Nyhan et al, “Effective Messages in Vaccine Promotion: A Randomized Trial,” <em>Pediatrics</em> Vol. 133 No. 4, April 1, 2014, pp. e835-e842</td>
<td></td>
</tr>
<tr>
<td>PLOS One: Misinformation Lingers in Memory: Failure of Three Pro-Vaccination Strategies</td>
<td><a href="https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0181640">https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0181640</a></td>
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Use data and rapid cycle testing to continuously improve (e.g., Plan-Do-Study-Act (PDSA))

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<tbody>
<tr>
<td><strong>See Appendix C &amp; D for additional resources on rapid cycle testing</strong></td>
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<thead>
<tr>
<th><strong>Create a positive immunization culture in your practice</strong></th>
<th><strong>CDC: Ten Ways to Create a Culture of Immunizations In Your Pediatric Practice</strong></th>
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<tbody>
<tr>
<td><strong>Powerpoint presentation presents concrete ways that your practice can create a culture of immunization during all steps of a well child visit, from check-in to check-out</strong></td>
<td><a href="https://www.cdc.gov/vaccines/partners/childhood/professionals.html">https://www.cdc.gov/vaccines/partners/childhood/professionals.html</a></td>
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### Table 3 | Immunization Change Package
**Key Driver 3: Decrease Missed Opportunities To Vaccinate**

<table>
<thead>
<tr>
<th>Interventions</th>
<th>Tools &amp; Resources</th>
<th>Where to Access</th>
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<tbody>
<tr>
<td>Use every opportunity to vaccinate (including acute visits and walk-ins and check vaccine records during every patient visit)</td>
<td><strong>General Protocol Example for Vaccinating During Non-well Child Visits</strong>&lt;br&gt;<strong>CDC: Getting Vaccines When Child Is Sick Guidelines</strong></td>
<td><a href="https://downloads.aap.org/DOCCSA/General%20Protocol%20Example.pdf">https://downloads.aap.org/DOCCSA/General%20Protocol%20Example.pdf</a>&lt;br&gt;<a href="https://www.cdc.gov/vaccines/parents/visit/sick-child.html">https://www.cdc.gov/vaccines/parents/visit/sick-child.html</a></td>
</tr>
</tbody>
</table>
## Implement standing orders for routine and shot only visits

**IAC: Using Standing Orders for Administering Vaccines: What You Should Know**
- Q&A on standing orders including, what they are and who can administer vaccines under them

**IAC: 10 Steps for Implementing Standing Orders for Immunizations in Your Practice Setting**
- 10 steps to implementing standing orders in the practice

**AAP: PDSA Cycle Template For Standing Orders**

**IAC: Sample standing orders for specific vaccinations:**
- Diphtheria, tetanus, acellular pertussis vaccine (DTaP) - Children
- Hepatitis A vaccine (HepA) - Children and teens
- Hepatitis B vaccine (HepB) - Children and teens
- Haemophilus influenzae type b vaccine (Hib) - Children and teens
- Influenza inactivated and live intranasal - Children and teens
- Measles, mumps, & rubella vaccine (MMR) - Children and teens
- Pneumococcal conjugate vaccine (PCV) - Children
- Pneumococcal polysaccharide vaccine (PPSV) - Children and teens
- Poliovirus vaccine inactivated (IPV) - Children and teens
- Rotavirus vaccine (Rv) - Infants
- Varicella vaccine (Var) - Children and teens

**http://www.immunize.org/catg.d/p3066.pdf**

**http://www.immunize.org/catg.d/p3067.pdf**


**DTap: http://www.immunize.org/catg.d/p3073.pdf**

**HepA: http://www.immunize.org/catg.d/p3077a.pdf**

**HepB: http://www.immunize.org/catg.d/p3076a.pdf**

**Hib: http://www.immunize.org/catg.d/p3083a.pdf**

**Influenza: http://www.immunize.org/catg.d/p3074a.pdf**

**MMR: http://www.immunize.org/catg.d/p3079a.pdf**

**PCV: http://www.immunize.org/catg.d/p3086.pdf**

**PPSV: http://www.immunize.org/catg.d/p3075a.pdf**

**IPV: http://www.immunize.org/catg.d/p3071.pdf**

**Rv: http://www.immunize.org/catg.d/p3087.pdf**

**Var: http://www.immunize.org/catg.d/p3080a.pdf**

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| Implement and follow proper storage and handling processes | CDC: You Call The Shots-Module Ten: Storage And Handling—2018 | https://www2a.cdc.gov/nip/isd/ycts/mod1/courses/sh/index.html |
| | o This module discusses vaccine-preventable diseases and the latest recommendations for vaccine storage, administration, and use. Each module provides learning opportunities, self-test knowledge checks, reference and resource materials, and an extensive glossary. | |
| | CDC: Vaccine Storage and Handling Toolkit | https://www.cdc.gov/vaccines/hcp/admin/storage/toolkit/index.html |
| | EZIZ Vaccine Storage and Handling Job Aids | http://eziz.org/resources/storage-handling-job-aids/ |

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<tbody>
<tr>
<td><strong>Helpful job aides for vaccine storage, including great visuals for storage units</strong></td>
<td></td>
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<tr>
<td><strong>AAP: Refrigerators, Freezers, and Vaccine Storage (PDF) - Determine vaccine storage choices and needs for your office</strong></td>
<td><a href="https://www.aap.org/en-us/Documents/immunization_vaccinestoragerf.pdf">https://www.aap.org/en-us/Documents/immunization_vaccinestoragerf.pdf</a></td>
</tr>
<tr>
<td><strong>AAP: Data Loggers and Vaccine Monitoring (PDF) - Determine vaccine monitoring equipment choices and needs for your office</strong></td>
<td><a href="https://www.aap.org/en-us/Documents/immunization_dataloggers.pdf">https://www.aap.org/en-us/Documents/immunization_dataloggers.pdf</a></td>
</tr>
<tr>
<td></td>
<td>A summary of CDC guidance on vaccine storage, storage units, monitoring, refrigerator and freezer brands, and data logger brands</td>
</tr>
<tr>
<td><strong>IAC: Don’t Be Guilty of These Preventable Errors in Vaccine Storage and Handling</strong></td>
<td><a href="http://www.immunize.org/catg.d/p3036.pdf">http://www.immunize.org/catg.d/p3036.pdf</a></td>
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<td>List of vaccine and storage errors to avoid</td>
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<td>Fahrenheit</td>
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<td>Celsius</td>
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<td>How to prepare for power loss, and what to do before and after</td>
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<tr>
<td>Key Driver 4: Utilize Population Health Strategies</td>
<td>Tools &amp; Resources</td>
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<tr>
<td>-----------------------------------------------</td>
<td>-------------------</td>
</tr>
<tr>
<td>Know your state IIS staff</td>
<td>CDC: Contacts for IIS State Immunization Registries</td>
</tr>
<tr>
<td>Utilize state immunization registry (IIS)</td>
<td>CPSTF: The Community Guide Recommendations on IIS Utilization To Improve Coverage Rates</td>
</tr>
<tr>
<td></td>
<td>CDC: IIS Resources and Reference Materials</td>
</tr>
<tr>
<td>Utilize information to understand current vaccine rates, IIS state regulations, and state exemption policies when applicable</td>
<td>AAFP: Tools to Improve Population Health</td>
</tr>
<tr>
<td></td>
<td>Interactive U.S. map comparing state immunization rates, state exemptions, and state IIS regulations</td>
</tr>
<tr>
<td></td>
<td>State School and Childcare Vaccination Laws</td>
</tr>
</tbody>
</table>

Source: American Academy of Pediatrics, Chapter Quality Network (CQN)  
Updated February 27, 2019
<table>
<thead>
<tr>
<th>Task</th>
<th>Resource</th>
<th>URL</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>CDC: IIS Functional Standards</td>
<td><a href="https://www.cdc.gov/vaccines/programs/iis/functional-standards/func-stds-v4-0.html">https://www.cdc.gov/vaccines/programs/iis/functional-standards/func-stds-v4-0.html</a></td>
</tr>
<tr>
<td></td>
<td>CDC: Patient Reminder Systems &amp; Strategies To Increase Vaccination Rates</td>
<td><a href="https://www.cdc.gov/vaccines/hcp/admin/reminder-sys.html">https://www.cdc.gov/vaccines/hcp/admin/reminder-sys.html</a></td>
</tr>
<tr>
<td>Use recall data reports to track recall effectiveness and efficiency</td>
<td>AIRA: Implementation of Provider-Based Text Message Recall Through an immunization Information System</td>
<td><a href="http://repository.immregistries.org/resource/track-b-iis-fundamentals/from/iis-data/data-use/reminder-recall/">http://repository.immregistries.org/resource/track-b-iis-fundamentals/from/iis-data/data-use/reminder-recall/</a></td>
</tr>
<tr>
<td></td>
<td>NIH: Utilizing health information technology to improve vaccine communication and coverage</td>
<td><a href="https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3906285/">https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3906285/</a></td>
</tr>
</tbody>
</table>

Stockwell, MS and Fiks, AG. Utilizing Health Information Technology to Improve Vaccine Communication and
Appendix A | CQN Immunization Key Driver Diagram

<table>
<thead>
<tr>
<th>Key Drivers</th>
<th>Interventions</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Physician Practice Champion responsible for driving improvement</td>
<td>1. Form a 3-5 person interdisciplinary QI Team led by designated practice champion</td>
</tr>
<tr>
<td>2. Implement team based care with informed and engaged staff</td>
<td>2. Formally communicate to entire practice the importance and goal of this project</td>
</tr>
<tr>
<td>3. Decrease missed opportunities to vaccinate and reduce delays in on time vaccinations</td>
<td>3. Ensure providers agree to follow ACIP vaccination schedule, catch up schedule and follow the General Recommendations on Immunizations. Recommendations of the Advisory Committee on Immunization Practices</td>
</tr>
<tr>
<td>4. Improve immunization rates at the population level through regular use of the IIS</td>
<td>4. Ensure QI team meets regularly to work on improvement to review data and develop/implement PDSA cycles</td>
</tr>
<tr>
<td>5. Active participation in a peer to peer learning network</td>
<td>5. Ensure practice management systems are in place to optimize vaccine purchasing and payment</td>
</tr>
<tr>
<td></td>
<td>6. Communicate project status with appropriate leaders within the participating physicians’ organization</td>
</tr>
</tbody>
</table>

Source: American Academy of Pediatrics, Chapter Quality Network (CQN) Updated February 27, 2019
## Appendix B | CQN Immunization Measures Grid

### CQN U.S. IMMUNIZATIONS QI PROJECT

Up-to-date is defined according to ACIP recommendations. For details on up-to-date algorithm follow this link.
https://www.cdc.gov/vaccines/programs/cosasa/reports/algorith-ref.html

* Missed Opportunity Goal and Recall Goals will be developed at the practice level after baseline data is collected.

<table>
<thead>
<tr>
<th>Measure Name/Type</th>
<th>Measure Definition</th>
<th>Source of Measure</th>
<th>Measure Calculation (Numerator/Denominator)</th>
<th>Measure Benchmark</th>
<th>Measure Target/Goal (%)</th>
<th>Collection Frequency</th>
</tr>
</thead>
</table>
| **Combination 3 Vaccination Measure** | The percentage of children 19-35 months of age who are up-to-date on diphtheria, tetanus and acellular pertussis (DTaP), polio (IPV), measles, mumps and rubella (MMR); H influenza type B (Hib); hepatitis B (HepB); chicken pox (VZV); pneumococcal conjugate (PCV) | IIS               | **Target Population:** All patients 19-35 months old in reporting month  
|                             | **Numerator:** All children 19-35 months of age who are up-to-date on:  
|                             | • diphtheria, tetanus and acellular pertussis (DTaP);  
|                             | • polio (IPV);  
|                             | • measles, mumps and rubella (MMR);  
|                             | • H influenza type B (Hib);  
|                             | • hepatitis B (HepB);  
|                             | • chicken pox (VZV);  
|                             | • pneumococcal conjugate (PCV)  
|                             | **Denominator:** All children 19-35 months of age | Baseline rates and state rates | 80% | Monthly |
| **DTaP Vaccination Rate**  | The percentage of children 19-35 months of age who are up-to-date on diphtheria, tetanus and acellular pertussis (DTaP) vaccines | IIS               | **Target Population:** All patients 19-35 months old in reporting month  
|                             | **Numerator:** All children 19-35 months of age who are up-to-date on diphtheria, tetanus and acellular pertussis (DTaP) vaccines | IIS               | **Denominator:** All children 19-35 months of age | Baseline rates and state rates | 90% | Monthly |
| **IPV Vaccination Rate**   | The percentage of children 19-35 months of age who are up-to-date on polio (IPV) vaccines | IIS               | **Target Population:** All patients 19-35 months old in reporting month  
|                             | **Numerator:** All children 19-35 months of age who are up-to-date on polio (IPV) vaccines | IIS               | **Denominator:** All children 19-35 months of age | Baseline rates and state rates | 90% | Monthly |
| **MMR Vaccination Rate**   | The percentage of children 19-35 months of age who are up-to-date on measles, mumps and rubella (MMR) vaccine | IIS               | **Target Population:** All patients 19-35 months old in reporting month  
|                             | **Numerator:** All children 19-35 months of age who are up-to-date on measles, mumps and rubella (MMR) vaccine | IIS               | **Denominator:** All children 19-35 months of age | Baseline rates and state rates | 90% | Monthly |
| **Hib Vaccination Rate**   | The percentage of children 19-35 months of age who are up-to-date on H influenza type B (Hib) vaccines | IIS               | **Target Population:** All patients 19-35 months old in reporting month  
<p>|                             | <strong>Numerator:</strong> All children 19-35 months of age who are up-to-date on H influenza type B (Hib) vaccines | IIS               | <strong>Denominator:</strong> All children 19-35 months of age | Baseline rates and state rates | 90% | Monthly |</p>
<table>
<thead>
<tr>
<th>Indicator</th>
<th>Description</th>
<th>Target Population</th>
<th>Baseline rates and state rates</th>
<th>Reporting Period</th>
</tr>
</thead>
</table>
| **HepB Vaccination Rate**        | The percentage of children 19-35 months of age who are up-to-date on Hepatitis B (HepB) vaccines | **Numerator:** All patients 19-35 months old in reporting month  
**Denominator:** All children 19-35 months of age | 90%                            | Monthly                        |
| **VZV Vaccination Rate**         | The percentage of children 19-35 months of age who are up-to-date on chicken pox (VZV) vaccines | **Numerator:** All children 19-35 months old in reporting month  
**Denominator:** All children 19-35 months of age | 90%                            | Monthly                        |
| **PCV Vaccination Rate**         | The percentage of children 19-35 months of age who are up-to-date on pneumococcal conjugate (PCV) vaccines | **Numerator:** All children 19-35 months old in reporting month  
**Denominator:** All children 19-35 months of age | 90%                            | Monthly                        |
| **Missed Opportunity Rate**      | The percentage of patients that do not receive all eligible vaccinations when they present in the office | **Numerator:** All patients due for a childhood vaccine ages 19-35 months without documented contraindications that were in the office during the reporting period  
**Denominator:** All patients ages 19-35 months that were due for vaccines when they presented in the office | Baseline rates | TBD*  | Monthly |
| **Patient Recalls**              | The number of patients who were overdue for a vaccination and received a recall notification | **Numerator:** All patients due for a childhood vaccine ages 19-35 months who were overdue for a vaccination and received a recall notification | Baseline rates | TBD*  | Monthly |
| **Method of patient recalls**    | The percentage of recalled patients who were contacted by each of the following methods: phone call from staff, autodialer, postcard/letter sent in mail, automated text message, a recall facilitated through the IIS | **Numerator:** All patients due for a childhood vaccine ages 19-35 months who received a recall notification  
**Denominator:** All patients ages 19-35 months who were overdue for a vaccination and received a recall notification through each method  
**Numerator:** phone call - patients ages 19-35 months who were overdue for a vaccination and received a recall notification through a phone call from staff  
**Numerator:** autodialer - patients ages 19-35 months who were overdue for a vaccination and received a recall notification through an autodialer  
**Numerator:** postcard/letter - patients ages 19-35 months who were overdue for a vaccination and received a recall notification through a postcard/letter sent in mail  
**Numerator:** automated text message - patients ages 19-35 months who were overdue for a vaccination and received a recall notification through an automated text message  
**Numerator:** IIS - patients ages 19-35 months who were overdue for a vaccination and received a recall notification facilitated through the IIS  
**Denominator:** All patients ages 19-35 months who were overdue for a vaccination and received a recall notification | Baseline rates | TBD*  | Monthly |
Appendix C | Quality Improvement Glossary

**Action Period**
The period of time between learning sessions. During these periods, practice teams work on improvement in their practice or office settings. These teams are supported by the collaborative leadership (chapter project team) and collaborate with other core QI teams on monthly webinars.

**Aim**
A written, measurable, and time-sensitive statement of the expected results of an improvement process.

**Change Concept**
A general idea for changing a process. Change concepts are usually at a high level of abstraction but evoke multiple ideas for specific processes. “Simplify,” “reduce handoffs,” and “consider all parties as part of the same system,” are all examples of change concepts.

**Key Changes**
The list of essential process changes that will help lead to breakthrough improvement.

**Key Driver Diagram**
The Key Driver Diagram organizes the theory of improvement for a specific aim. It is a way to organize and visualize the relationship between this project’s goal, the high-level changes that will get you to your goal (key drivers), and the specific activities that a practice needs to complete (interventions). The key drivers provide a focus for changes to test. The CQN Immunization key driver diagram was developed to identify pathways to improve coverage rates and overall immunization care.

**Learning Session**
In this project, there are two types of learning sessions. We will hold one face-to-face learning session, hosted by the Chapter and National faculty, during which participating core QI teams will learn and practice foundational information and skills for the project. We will also hold two learning sessions that will be webinar-based.

**Source:** American Academy of Pediatrics, Chapter Quality Network (CQN)  
**Updated February 27, 2019**
We call these learning sessions rather than training workshops, as these sessions are designed to optimize learning amongst the participating core QI teams, highlight successes, and share stories to learn from one another. Core QI teams leave these meetings with new knowledge, skills, and materials that prepare them to make immediate changes.

**Implementation**
Taking a change and making it a permanent part of the system. A change may be tested first and then implemented throughout the organization. Key Changes: The list of essential process changes that will help lead

**Measure**
An indicator of change. Key measures should be focused, aligned with the aim, and be reportable. A measure is used to track the delivery of proven interventions to patients and to monitor progress over time.

**Model for Improvement**
An approach to process improvement, developed by Associates in Process Improvement, which helps core QI teams accelerate the adoption of proven and effective changes. The model is composed of three foundational questions and PDSA cycles. You will learn more about the model at Learning Session 1.

**PDSA Cycle**
A structured way to test a process change in the real work setting. This includes:
- **Plan**: a specific planning phase;
- **Do**: a time to try the change and observe what happens;
- **Study**: an analysis of the results of the trial; and
- **Act**: devising next steps based on the analysis.

This PDSA cycle will naturally lead to the “plan” component of a subsequent cycle.
Process Change
A specific change in a process in the organization. More focused and detailed than a change concept, a process change describes what specific changes should occur. “Institute a pain management protocol for patients with moderate to severe pain” is an example of a process change.

Run Chart
A graphic representation of data over time, also known as a “time series graph” or “line graph.” This type of data display is particularly effective for process improvement activities.

Sampling Plan
A specific description of the data to be collected, the interval of data collection, and the subjects from whom the data will be collected. It emphasizes the importance of gathering samples of data and how to obtain “just enough” information.

Spread
The intentional and methodical expansion of the number and type of people, units, or organizations using the improvements. The theory and application come from the literature on Diffusion of Innovation (Everett Rogers, 1995).

Tests of Change
A small-scale trial of a new approach or a new process. A test is designed to learn if the change results in improvement and to fine tune the change to fit the practice and patients. Tests are carried out using one or more PDSA cycles.
Appendix D| Quality Improvement Resources

These quality improvement resources are adapted by The National Institute for Children’s Health Quality (NICHQ). To learn more, visit www.nichq.org.

Online Modules: Quality Improvement 101 and 102 Courses:

**Quality Improvement 101**: This digital course is the first step in understanding the fundamentals of QI methodology, from aim statements to Plan-Do-Study-Act (PDSA) cycles. Users will gain a robust understanding of how they can use QI to lead change initiatives in their communities. Take the course.

**Quality Improvement 102**: Completed QI 101? Get started with QI 102, the next step in understanding and implementing improvement best practices. You’ll learn how to move confidently from one PDSA cycle to another, testing your improvement ideas to increase their impact. Take the course.

**PDSA Cycle Skill Building**
The PDSA cycle is a fundamental tool in the quality improvement tool belt—it helps teams test, implement and spread change ideas in a systematic way. Here are five articles with strategies to help you maximize learning during your PDSA cycle.

- How to Avoid the Most Common Pitfalls in Planning PDSA Cycles
- 9 Tips for Moving from One PDSA Cycle to the Next
- Mastering the Planning Stage of PDSAs
- 5 Tips for Testing to Optimize Your Next PDSA
- How to Avoid Analysis Paralysis and Underplanning in PDSAs

**Do More with Data**
Tracking and evaluating data can transform your improvement efforts. Use these resources and ideas to help you effectively leverage data at every phase of a QI initiative.

Source: American Academy of Pediatrics, Chapter Quality Network (CQN)  Updated February 27, 2019
• Introduction to Using Control Charts, a statistical tool that can help users identify variation and use that knowledge to guide their improvement work.
• Why Data Collection is a Necessary Part of Quality Improvement
• Use Evaluation to Guide PDSAs Rather Than Derail Them
• 3 Tips for Transforming Data into Visuals That Tell a Clear Story

Sustainability Strategies
Ever worry that the changes you've made during an improvement process won't stick? Here's advice on building a foundation for sustainability that ensures continued impact.

• Setting the Stage for Sustainability in Quality Improvement Projects
• Holding your Gains without the Pain
• Tips for Sustaining Leadership Involvement in your QI Projects