



Chapter Quality Network US Immunizations Project | Change Package

American Academy of Pediatrics

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

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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

¹ Zhou, Fangjun. (2011, March 29). Updated economic evaluation of the routine childhood immunization schedule in the United States. Presentation at the National Immunization Conference, Washington, DC. Available at: <https://cdc.confex.com/cdc/nic2011/webprogram/Paper26209.html>

² Allred, J. Norma (2013, July 17). The impact of missed opportunities on seasonal influenza vaccination coverage for healthy young children. <http://pediatrics.aappublications.org/content/97/4/474.short> Accessed May 2, 2016



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.

³ Centers for Disease Control and Prevention. *Hypertension Control Change Package for Clinicians*. Atlanta, GA: Centers for Disease Control and Prevention, US Dept. of Health and Human Services; 2015.

Figure 1. Phase I Top Ten Interventions

1. Requiring vaccination records at initial appointment
2. Reviewing vaccination status at all visits
3. Vaccinating at acute visits
4. Integrating immunization registry into daily workflow
5. Utilizing non-confrontational communication with parents
6. Implementing a recall system
7. Ensuring accurate patient lists
8. Implementing standing orders for routine and 'shot only' visits
9. Clinician and staff training on vaccine office systems and communication strategies
10. Using data and rapid cycle testing to continuously improve

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:

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



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

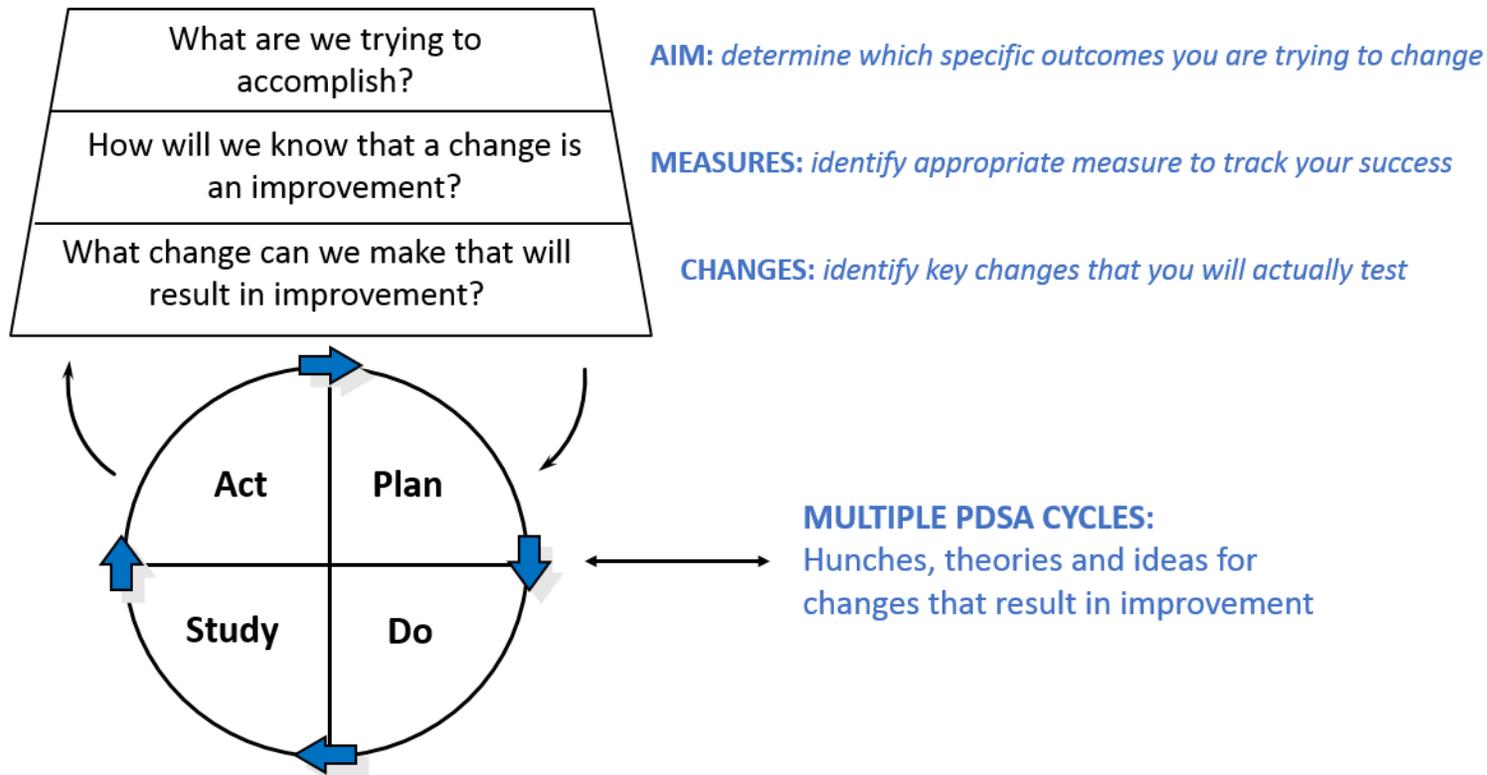
1. What are we trying to accomplish?
2. How will we know that a change is an improvement?
3. What changes can we make that will result in improvement?

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).

⁴ Langley GL, Moen RD, Nolan KM, Nolan TW, Norman CL, and Provost LP. *The Improvement Guide: A Practical Approach to Enhancing Organizational Performance*. 2nd Edition. San Francisco, CA: Jossey-Bass; 2009.

Figure 3. Model for Improvement



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		
Interventions	Tools & Resources	Where to Access
Utilize the most up-to-date Recommended Immunization Schedule from the AAP and the Advisory Committee on Immunization Practices (ACIP)	<p>CDC: Recommended Immunization Schedule for Children and Adolescents Aged 18 Years or Younger, U.S. 2019</p> <p>AAP: Recommendations for Prevention and Control of Influenza in Children, 2018-2019</p> <p>AAP: Recommended Childhood and Adolescent Immunization Schedules: United States, 2019</p>	<p>https://www.cdc.gov/vaccines/schedules/hcp/child-adolescent.html</p> <p>http://pediatrics.aappublications.org/content/142/4/e20182367</p> <p>http://pediatrics.aappublications.org/content/early/2019/02/01/peds.2019-0065</p>
Utilize Catch-Up Schedule when appropriate	CDC: Catch Up Guidance Job Aid	https://www.cdc.gov/vaccines/schedules/hcp/imz/catchup.html
Utilize national best practice standards for optimal immunization care	<p>CDC: National Vaccine Advisory Committee (NVAC) Standards for Child and Adolescent Immunization Practices</p> <p>CDC: ACIP General Best Practice Guidelines for Immunization</p> <p>Community Preventive Services Task Force Community Guide</p> <ul style="list-style-type: none"> • Tables providing intervention tools and resources based on evidence of findings to increase vaccination in three categories <ul style="list-style-type: none"> ○ Enhancing access to vaccination services ○ Increasing community demand for services ○ Provider or system-based interventions 	<p>https://www.aap.org/en-us/advocacy-and-policy/aap-health-initiatives/immunizations/Practice-Management/Pages/NVAC-Information.aspx</p> <p>https://www.cdc.gov/vaccines/hcp/acip-recs/general-recs/index.html</p> <p>https://www.thecommunityguide.org/content/task-force-findings-increasing-vaccination</p>

<p>Utilize the most comprehensive information and resources on routinely used vaccines and the diseases they prevent</p>	<p>CDC: “Pink Book” 13th Edition, Epidemiology and Prevention of Vaccine-Preventable Diseases</p> <ul style="list-style-type: none"> ○ General Recommendations on Immunizations to include: <ul style="list-style-type: none"> - Timing and Spacing of Vaccines - Adverse Reactions - Contraindications & Precautions - Invalid Contraindications - Screening for Contraindications and Precautions 	<p>https://www.cdc.gov/vaccines/pubs/pinkbook/index.html</p> <p>https://www.cdc.gov/vaccines/pubs/pinkbook/genrec.html</p>
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Table 2 Immunization Change Package Key Driver 2: Implement Team-Based Care With Informed and Engaged Staff		
Interventions	Tools & Resources	Where to Access
<p>Provide training tools and resources for office staff to ensure staff is informed, up to date and knowledgeable regarding immunizations</p>	<p>AAP: Immunization Training Guide</p> <ul style="list-style-type: none"> ○ Educate and properly train physicians, nurse practitioners, physician assistants, nurses, medical assistants, office managers, and other office staff <p>AAP: Vaccine Administration Web Pages</p> <ul style="list-style-type: none"> ○ Tables describing the appropriate route for administering each vaccine available <p>AAP: Avoiding Vaccine Administration Errors</p>	<p>https://www.aap.org/en-us/advocacy-and-policy/aap-health-initiatives/immunization/Pages/training-guide.aspx</p> <p>https://www.aap.org/en-us/advocacy-and-policy/aap-health-initiatives/immunization/Pages/vaccine-admin.aspx</p> <p>https://www.aap.org/en-us/advocacy-and-policy/aap-health-initiatives/immunizations/Practice-Management/Pages/Avoiding-Vaccine-Administration-Errors.aspx</p>

	<p><u>IAC: Administering Vaccines: Dose, Route, Site, and Needle Size</u></p> <ul style="list-style-type: none"> ○ How to administer vaccines (with tables and images) providing information on correct, dose, route, site, and needle length <p><u>IAC: How to Administer Intramuscular and Subcutaneous Vaccine Injections</u></p> <p><u>IAC: Vaccines with Diluents: How to Use Them</u></p> <ul style="list-style-type: none"> ○ How to use diluents: how long they should be stored, and how long after reconstitution they last <p><u>CDC: One and Only Campaign Videos</u></p> <ul style="list-style-type: none"> ○ Appropriate vaccine administration techniques <p><u>IAC: Ask the Experts: Documenting Vaccination</u></p> <p><u>IAC: Vaccine Administration Record for Children and Teens</u></p> <ul style="list-style-type: none"> ○ Blank immunization record for children and/or teen <p><u>AAP: Ordering Vaccines</u></p> <ul style="list-style-type: none"> ○ Ordering vaccines and techniques for getting the best prices/discounts 	<p>http://www.immunize.org/catg.d/p3085.pdf</p> <p>http://www.immunize.org/catg.d/p2020.pdf</p> <p>http://www.immunize.org/catg.d/p3040.pdf</p> <p>https://www.aap.org/en-us/advocacy-and-policy/aap-health-initiatives/immunizations/Practice-Management/Pages/Vaccine-Videos.aspx</p> <p>http://www.immunize.org/askexperts/documenting-vaccination.asp</p> <p>http://www.immunize.org/catg.d/p2022.pdf</p> <p>https://www.aap.org/en-us/advocacy-and-policy/aap-health-initiatives/immunization/Pages/ordering.aspx</p>
<p>Create and periodically update process workflow map to establish procedures and identify areas for improvement</p>	<p><u>AAP: Office Strategies for Improving Immunization Rates</u></p> <ul style="list-style-type: none"> ○ various strategies that could help raise rates, including, provider prompts, standing orders, provider feedback and more <p><u>AAP: Practice Transformation Resources</u></p>	<p>https://www.aap.org/en-us/advocacy-and-policy/aap-health-initiatives/immunizations/Practice-Management/Pages/office-strategies.aspx</p> <p>https://www.aap.org/en-us/professional-resources/practice-transformation/Pages/practice-transformation.aspx</p>

	<p><u>IHI: Five Steps for Creating Value Through Process Mapping</u></p> <ul style="list-style-type: none"> ○ IHI is a global leader. Their website includes open sourced resources to aid QI teams <p><u>Dartmouth Microsystem Academy: Value Stream Mapping</u></p> <ul style="list-style-type: none"> ○ Dartmouth Microsystem Academy is a premier training center for quality improvement. Their website includes open sourced resources to aid QI teams. <p><u>IAC: Suggestions to Improve Your Immunization Services</u></p>	<p>http://www.ihi.org/communities/blogs/5-steps-for-creating-value-through-process-mapping-and-observation</p> <p>http://www.clinicalmicrosystem.org/uploads/documents/value_stream_map.doc</p> <p>http://www.immunize.org/catg.d/p2045.pdf</p>
<p>Utilize effective and positive communication strategies to discuss vaccines with hesitant parents</p>	<p><u>AAP: Communicating with Families Web Pages</u></p> <ul style="list-style-type: none"> ○ Strategies to discuss vaccines, common concerns parents have, how to use vaccine information statements, and how to deal with vaccine refusals <p><u>AAP: Risk Communication Videos</u></p> <ul style="list-style-type: none"> ○ Risk communication videos demonstrate the CASE (Corroborate, About Me, Science, Explain/Advise) model for vaccine discussions with parents <p><u>AAP: Policy on Countering Vaccine Hesitancy</u></p> <p><u>AAP & CDC: Case Studies on Vaccine Hesitancy</u></p> <ul style="list-style-type: none"> ○ Case studies present real-life scenarios on vaccine hesitancy <p><u>AAP: Challenging Cases- Vaccine Hesitancy</u></p> <ul style="list-style-type: none"> ○ AAP – PediaLink Course - provides strategies to promote vaccine confidence in vaccine-hesitant 	<p>https://www.aap.org/en-us/advocacy-and-policy/aap-health-initiatives/immunizations/Pages/Communicating-with-Families.aspx</p> <p>https://www.aap.org/en-us/advocacy-and-policy/aap-health-initiatives/immunizations/Pages/Communication-Aides.aspx#Riskhttp://pediatrics.aappublications.org/content/138/3/e20162146.</p> <p>https://www.aap.org/en-us/advocacy-and-policy/aap-health-initiatives/immunization/Pages/Case-Studies.aspx</p> <p>https://www.cdc.gov/vaccines/hcp/conversations/index.html</p> <p>https://shop.aap.org/challenging-cases-vaccine-hesitancy/</p>

	<p>parents in a time efficient but effective manner, including case studies on infant vaccination and MMR vaccination</p> <p><u>CDC: Provider Resources for Vaccine Conversations with Parents</u></p> <ul style="list-style-type: none"> ○ Vaccine Information Statements (VISs), vaccine safety and a few other immunization topics as handouts <p><u>IAC: You Must Give Your Patients Vaccine Information Statements (VISs) – It’s Federal Law</u></p> <ul style="list-style-type: none"> ○ How the VIS should be used and what the law requires that vaccine providers offer a VIS to parents or those receiving a vaccine <p><u>Parent PACKS Resource: The Children’s Hospital of Philadelphia (CHOP) Vaccine Education Center</u></p> <ul style="list-style-type: none"> ○ The Children’s Hospital of Philadelphia (CHOP) Vaccine Education Center has many excellent vaccine resources for parents <p><u>AAP: Immunization Social Media Toolkit</u></p> <ul style="list-style-type: none"> ○ The Social Media Toolkit provides information on how to start and use social media accounts and provides sample messages, videos, and resources to share <p><u>NIH: The Architecture of Provider-Parent Vaccine Discussions at Health Supervision Visits</u></p>	<p>https://www.cdc.gov/vaccines/hcp/vis/current-vis.html</p> <p>http://www.immunize.org/catg.d/p2027.pdf</p> <p>https://www.chop.edu/centers-programs/parents-pack</p> <p>https://www.aap.org/en-us/advocacy-and-policy/aap-health-initiatives/immunizations/Practice-Management/Pages/Immunization-Social-Media-Toolkit.aspx</p> <p>https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3838535/ DJ Opel et al, “The Architecture of Provider-Parent Vaccine Discussions at Health Supervision Visits,” <i>Pediatrics</i> Vol. 132 No. 6, December 1, 2013, pp. 1037-1046</p>
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	<p>NIH: Effective messages in vaccine promotion: a randomized trial</p> <p>Vaccine: Does Correcting Myths about the Flu Vaccine Work? An Experimental Evaluation of the Effects of Corrective Information</p> <p>PLOS One: Misinformation Lingers in Memory: Failure of Three Pro-Vaccination Strategies</p>	<p>https://www.ncbi.nlm.nih.gov/pubmed/24590751 B Nyhan et al, "Effective Messages in Vaccine Promotion: A Randomized Trial," <i>Pediatrics</i> Vol. 133 No. 4, April 1, 2014, pp. e835-e842</p> <p>https://core.ac.uk/download/pdf/77031409.pdf B. Nyhan et al, "Does Correcting Myths about the Flu Vaccine Work? An Experimental Evaluation of the Effects of Corrective Information," <i>Vaccine</i> Vol. 33 No. 3, Jan. 9, 2015 pp. 459-64</p> <p>https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0181640 S Pluviano et al, "Misinformation Lingers in Memory: Failure of Three Pro-Vaccination Strategies," <i>PLOS One</i> Vol. 12 No. 7, July 27, 2017, e0181640</p>
<p>Use data and rapid cycle testing to continuously improve (e.g., Plan-Do-Study-Act (PDSA))</p>	<p>AAP: Blank PDSA Form</p> <p>AAP: Immunization Practice Change Tools</p> <p>AAP: Immunization Assessment</p> <p>AAP: Vaccine Information Statements (VIS) PDSA Examples</p>	<p>https://www.aap.org/en-us/Documents/immunization_black_cycle2.pdf</p> <p>https://www.aap.org/en-us/advocacy-and-policy/aap-health-initiatives/immunizations/Practice-Management/Pages/Change-Template-on-Strategies-to-Improve-Immunization-Rates.aspx</p> <p>https://www.aap.org/en-us/Documents/immunization_pdsa_assessment.pdf</p> <p>https://www.aap.org/en-us/Documents/immunization_VIS_PDSA1.pdf</p> <p>https://www.aap.org/en-us/Documents/immunization_VIS_PDSA2.pdf</p>



	<p>AAP: Patient Recall PDSA Examples</p> <p>AAP: Missed Opportunities PDSA Example</p> <p>AAP: Immunization Registry PDSA Example</p> <p>AAP: Contraindications PDSA Example</p> <p>AAP: Provider Prompts</p> <p>See Appendix C & D for additional resources on rapid cycle testing</p>	<p>https://www.aap.org/en-us/Documents/immunization_Recall_PDSA1.pdf</p> <p>https://www.aap.org/en-us/Documents/immunization_Recall_PDSA2.pdf</p> <p>https://www.aap.org/en-us/Documents/immunization_pdsa_missed_opportunities.pdf</p> <p>https://www.aap.org/en-us/Documents/immunization_pdsa_registry.pdf</p> <p>https://www.aap.org/en-us/Documents/immunization_Contraindications_PDSA1.pdf</p> <p>https://www.aap.org/en-us/Documents/hpvtoolkit_providerprompts_hpv_pdsa.pdf</p>
<p>Create a positive immunization culture in your practice</p>	<p>CDC: Ten Ways to Create a Culture of Immunizations In Your Pediatric Practice</p> <ul style="list-style-type: none"> ○ 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 	<p>https://www.cdc.gov/vaccines/partners/childhood/professionals.html</p>

Table 3 Immunization Change Package		
Key Driver 3: Decrease Missed Opportunities To Vaccinate		
Interventions	Tools & Resources	Where to Access
Require vaccination records at initial patient appointment and provide resources for parents in finding immunization records	<p>IAC: Tips For Locating Old Immunization Records</p> <p>IAC: Links to State Health Department Websites</p> <p>CDC: Tips For Parents- Finding Official Immunization Records</p>	<p>http://www.immunize.org/catg.d/p3065.pdf</p> <p>http://www.immunize.org/states/</p> <p>https://www.cdc.gov/vaccines/parents/records-requirements.html</p>
Follow only true contraindications and precautions	<p>CDC: General Best Practice Guidelines for Contraindications and Precautions</p> <p>AAP: Red Book Vaccine Contraindications and Precautions</p> <ul style="list-style-type: none"> ○ Access for AAP members <p>IAC: Checklist for Contraindications to Vaccines for Children and Teens</p>	<p>https://www.cdc.gov/vaccines/hcp/acip-recs/general-recs/contraindications.html</p> <p>https://redbook.solutions.aap.org/chapter.aspx?sectionid=88186992&bookid=1484</p> <p>http://www.immunize.org/catg.d/p4060.pdf</p>
Use every opportunity to vaccinate (including acute visits and walk-ins and check vaccine records during every patient visit)	<p>General Protocol Example for Vaccinating During Non-well Child Visits</p> <p>CDC: Getting Vaccines When Child Is Sick Guidelines</p>	<p>https://downloads.aap.org/DOCCSA/General%20Protocol%20Example.pdf</p> <p>https://www.cdc.gov/vaccines/parents/visit/sick-child.html</p>

<p>Implement standing orders for routine and shot only visits</p>	<p><u>IAC: Using Standing Orders for Administering Vaccines: What You Should Know</u></p> <ul style="list-style-type: none"> ○ Q&A on standing orders including, what they are and who can administer vaccines under them <p><u>IAC: 10 Steps for Implementing Standing Orders for Immunizations in Your Practice Setting</u></p> <ul style="list-style-type: none"> ○ 10 steps to implementing standing orders in the practice <p><u>AAP: PDSA Cycle Template For Standing Orders</u></p> <p><u>IAC: Sample standing orders for specific vaccinations:</u></p> <ul style="list-style-type: none"> ○ 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 	<p>http://www.immunize.org/catg.d/p3066.pdf</p> <p>http://www.immunize.org/catg.d/p3067.pdf</p> <p>https://www.aap.org/en-us/Documents/immunization_pdsa_standing_orders.pdf</p> <p>DTaP: http://www.immunize.org/catg.d/p3073.pdf</p> <p>HepA: http://www.immunize.org/catg.d/p3077a.pdf</p> <p>HepB: http://www.immunize.org/catg.d/p3076a.pdf</p> <p>Hib: http://www.immunize.org/catg.d/p3083a.pdf</p> <p>Influenza: http://www.immunize.org/catg.d/p3074a.pdf</p> <p>MMR: http://www.immunize.org/catg.d/p3079a.pdf</p> <p>PCV: http://www.immunize.org/catg.d/p3086.pdf</p> <p>PPSV: http://www.immunize.org/catg.d/p3075a.pdf</p> <p>IPV: http://www.immunize.org/catg.d/p3071.pdf</p> <p>Rv: http://www.immunize.org/catg.d/p3087.pdf</p> <p>Var: http://www.immunize.org/catg.d/p3080a.pdf</p>
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<p>Identify a designated immunization “champion” in your office</p>	<p>CDC: Immunization Champions: Who Are They and Why Do We Need Them?</p> <p>NAM: Lessons Learned from Immunization Providers</p>	<p>https://www.cdc.gov/vaccines/events/niiw/planning/downloads/immunization-champions.pdf</p> <p>https://doi.org/10.31478/201806c Davis, T. C., C. Arnold, J. A. Dillaha, and B. M. Rosof. 2018. Lessons Learned from Immunization Providers: Strategies for Successful Immunization Efforts among Medicare Patients. <i>NAM Perspectives</i>. Commentary, National Academy of Medicine, Washington, DC.</p>
<p>Implement and follow proper storage and handling processes</p>	<p>CDC: You Call The Shots-Module Ten: Storage And Handling—2018</p> <ul style="list-style-type: none"> ○ 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. <p>AAP: Checklist for Maintaining Proper Storage and Handling Practices (PDF)</p> <p>AAP: Storage and Handling Resources</p> <p>CDC: Vaccine Storage and Handling Toolkit</p> <p>IAC: Checklist for Safe Vaccine Storage and Handling</p> <p>EZIZ Vaccine Storage and Handling Job Aids</p>	<p>https://www2a.cdc.gov/nip/isd/ycts/mod1/courses/sh/index.html</p> <p>https://www.aap.org/en-us/Documents/immunization_checklist_storageHandling.pdf</p> <p>https://www.aap.org/en-us/advocacy-and-policy/aap-health-initiatives/immunizations/Practice-Management/Pages/vaccine-storage-and-handling-guidance.aspx</p> <p>https://www.cdc.gov/vaccines/hcp/admin/storage/toolkit/index.html</p> <p>http://www.immunize.org/catg.d/p3035.pdf</p> <p>http://eziz.org/resources/storage-handling-job-aids/</p>



	<ul style="list-style-type: none"> ○ Helpful job aides for vaccine storage, including great visuals for storage units <p><u>AAP: Refrigerators, Freezers, and Vaccine Storage (PDF) - Determine vaccine storage choices and needs for your office</u></p> <p><u>AAP: Data Loggers and Vaccine Monitoring (PDF) - Determine vaccine monitoring equipment choices and needs for your office</u></p> <ul style="list-style-type: none"> ○ A summary of CDC guidance on vaccine storage, storage units, monitoring, refrigerator and freezer brands, and data logger brands <p><u>IAC: Don't Be Guilty of These Preventable Errors in Vaccine Storage and Handling</u></p> <ul style="list-style-type: none"> ○ List of vaccine and storage errors to avoid <p><u>IAC: Temperature Logs</u></p> <ul style="list-style-type: none"> ○ Fahrenheit ○ Celsius <p><u>AAP: Disaster Planning (PDF)</u></p> <ul style="list-style-type: none"> ○ How to prepare for power loss, and what to do before and after <p><u>CDC: Packing Vaccines for Transport during Emergencies (PDF)</u></p>	<p>https://www.aap.org/en-us/Documents/immunization_vaccinestoragerf.pdf</p> <p>https://www.aap.org/en-us/Documents/immunization_dataloggers.pdf</p> <p>http://www.immunize.org/catg.d/p3036.pdf</p> <p>http://www.immunize.org/catg.d/p3037f.pdf http://www.immunize.org/catg.d/p3037c.pdf</p> <p>https://www.aap.org/en-us/Documents/immunization_disasterplanning.pdf</p> <p>https://www.cdc.gov/vaccines/recs/storage/downloads/emergency-transport.pdf</p>
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Table 4 Immunization Change Package		
Key Driver 4: Utilize Population Health Strategies		
Interventions	Tools & Resources	Where to Access
Know your state IIS staff	CDC: Contacts for IIS State Immunization Registries	https://www.cdc.gov/vaccines/programs/iis/contacts-locate-records.html
Utilize state immunization registry (IIS)	<p>CPSTF: The Community Guide Recommendations on IIS Utilization To Improve Coverage Rates</p> <p>AAP: IIS Resources</p> <p>CDC: IIS Resources and Reference Materials</p> <p>AIRA: Preparing for Vaccination Coverage Assessments: A VFC Provider's Guide to Success</p> <p>AIRA: Identifying Immunization Pockets of Need – Small Area Analysis of IIS Data to Detect Undervaccinated Populations</p>	<p>https://www.thecommunityguide.org/content/new-publication-immunization-information-systems-increase-vaccination-rates</p> <p>https://www.aap.org/en-us/advocacy-and-policy/aap-health-initiatives/immunizations/Practice-Management/Pages/immunization-information-systems.aspx</p> <p>https://www.cdc.gov/vaccines/programs/iis/resources-refs/index.html</p> <p>http://repository.immregistries.org/resource/preparing-for-vaccination-coverage-assessments-a-vfc-providers-guide-to-success/from/AIRA-products-and-activities/</p> <p>http://repository.immregistries.org/resource/identifying-immunization-pockets-of-need-small-area-analysis-of-iis-data-to-detect-undervaccinated-p/from/AIRA-products-and-activities/</p>
Utilize information to understand current vaccine rates, IIS state regulations, and state exemption policies when applicable	<p>AAFP: Tools to Improve Population Health</p> <ul style="list-style-type: none"> ○ Interactive U.S. map comparing state immunization rates, state exemptions, and state IIS regulations <p>State School and Childcare Vaccination Laws</p>	<p>https://www.aafp.org/patient-care/public-health/immunizations/registry.html</p> <p>https://www.cdc.gov/phlp/publications/topic/vaccinations.html</p> <p>http://www.immunize.org/laws/</p>

<p>Integrate registry into daily workflow</p>	<p>AAP: How Can You Benefit From Using an IIS in Your Practice</p> <p>CDC: IIS Functional Standards</p>	<p>https://www.aap.org/en-us/advocacy-and-policy/aap-health-initiatives/immunizations/Practice-Management/Pages/immunization-information-systems.aspx</p> <p>https://www.cdc.gov/vaccines/programs/iis/functional-standards/func-stds-v4-0.html</p>
<p>Clean patient list to accurately reflect true patient population</p>	<p>AAP: Tips For Improving The Quality Of Your Data In Your IIS</p>	<p>https://www.aap.org/en-us/Documents/healthInitiatives_hpvtoolkit_cleaning_iis_data_2015.pdf</p>
<p>Implement a reminder/recall system for patients not up-to-date on vaccinations</p>	<p>AAP: Reminder/Recall Systems</p> <ul style="list-style-type: none"> ○ Information on ways to remind and recall patients including information utilizing auto-dialers <p>CDC: Patient Reminder Systems & Strategies To Increase Vaccination Rates</p>	<p>https://www.aap.org/en-us/advocacy-and-policy/aap-health-initiatives/immunizations/Practice-Management/Pages/reminder-recall-systems.aspx</p> <p>https://www.cdc.gov/vaccines/hcp/admin/reminder-sys.html</p>
<p>Use recall data reports to track recall effectiveness and efficiency</p>	<p>AIRA: Implementation of Provider-Based Text Message Recall Through an Immunization Information System</p> <p>AIRA: Recall/reminder in Immunization Information Systems</p>	<p>http://repository.immregistries.org/resource/track-b-iis-fundamentals/from/iis-data/data-use/reminder-recall/</p> <p>http://repository.immregistries.org/resource/reminder-recall-in-immunization-information-systems-1/from/AIRA-products-and-activities/best-practices/</p>
<p>Use and reliability of immunization information system</p>	<p>AIRA: Preparing For Vaccine Coverage Assessments: A VFC Provider's Guide To Success</p> <ul style="list-style-type: none"> ○ Guidance for immunization provider sites and provides best practice recommendations on how to best utilize IIS reports to improve data quality prior to running a vaccination coverage rate assessment. <p>NIH: Utilizing health information technology to improve vaccine communication and coverage</p>	<p>http://repository.immregistries.org/resource/preparing-for-vaccination-coverage-assessments-a-vfc-providers-guide-to-success/from/iis-data/</p> <p>https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3906285/ Stockwell, MS and Fiks, AG. Utilizing Health Information Technology to Improve Vaccine Communication and</p>



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		Coverage. <u>Hum Vaccine Immunother.</u> 2013 Aug 1; 9(8): 1802–1811.
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Appendix A | CQN Immunization Key Driver Diagram

AAP CQN Immunization Project

CQN Project Aim:

Make sustainable and measurable office process changes in participating practices to improve immunization rates for children 19-35 months.

Practice Aim:

From March 2017 to February 2018 we will lead a quality improvement collaborative and achieve measurable improvements in immunization rates by decreasing missed opportunities to vaccinate and initiate or sustain recall systems.

Practice Level Goals:

1. Practices will improve their missed opportunities rate over practice baseline

2. Practices will raise individual coverage rates in the Childhood Composite Immunization Status to reach/ or exceed the state average or Healthy People 2020 goals of 90%

3. Practices will show improvement in the Childhood Composite (DTaP, IPV, MMR, Hib, HepB, VZV, PCV)

4. 100% of Practices will demonstrate an improvement in using their recall system

Practice Level Key Driver Diagram

Key Drivers

1. Physician Practice Champion responsible for driving improvement

2. Implement team based care with informed and engaged staff

3. Decrease missed opportunities to vaccinate and reduce delays in on time vaccinations

4. Improve immunization rates at the population level through regular use of the IIS

5. Active participation in a peer to peer learning network

Interventions

1. Form a 3-5 person interdisciplinary QI Team led by designated practice champion
2. Formally communicate to entire practice the importance and goal of this project
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](#)
4. Ensure QI team meets regularly to work on improvement to review data and develop/implement PDSA cycles
5. Ensure practice management systems are in place to optimize vaccine purchasing and payment
6. Communicate project status with appropriate leaders within the participating physicians' organization
7. Assess ability to establish interoperability between practice information systems and the IIS
8. Ensure that practicing clinicians are meeting maintenance of certification criteria as determined by CQN

1. Create and periodically update process workflow map to establish procedures and identify areas for improvement
2. Adequate training is provided and tracked/monitored to assure knowledge, skills and effective communication across teams
3. Utilize effective and positive parent communication strategies regarding vaccinations
4. Demonstrate positive environment towards immunizations in the clinic culture

1. Establish current state of vaccination standards by completing a coverage improvement survey
2. Use every opportunity to vaccinate and follow only true contraindications and precautions from Table 6 of the [General Recommendations on Immunizations: Recommendations of the Advisory Committee on Immunization Practices](#)
3. Place vaccination protocols and schedule in locations where vaccines administered
4. Implement/improve standing orders for all routine vaccinations
5. Implement/improve a targeted recall system for patients not up to date on vaccinations

1. Employ standards to improve use and reliability of immunization information system
2. Establish/implement process to periodically clean patient list to accurately reflect true patient population
3. Collect and input vaccination data on a monthly basis according to project requirements
4. Use recall data reports to track recall effectiveness and efficiency
5. Check IIS record for each patient visit to ensure accuracy of practice record
6. Generate periodic population data using geographical coverage rates and vaccine usage reports

1. Attend 2 face-to-face learning sessions, 2 online webinars and monthly webinars with practice team members
2. Share best practices, tools, methods and approaches across the learning network
3. Review data regularly with practice improvement team and staff to drive improvement
4. Seek practices within the network that you can learn from and provide support and encouragement to other practice teams

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/cocasa/reports/algorithm-ref.html>

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

Measure Name/Type	Measure Definition	Source of Measure	Measure Calculation (Numerator/Denominator)	Measure Benchmark	Measure Target/Goal (%)	Collection Frequency
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: <ul style="list-style-type: none"> 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 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 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 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 Numerator: All children 19-35 months of age who are up-to-date on H influenza type B (Hib) vaccines Denominator: All children 19-35 months of age	Baseline rates and state rates	90%	Monthly

HepB Vaccination Rate	The percentage of children 19-35 months of age who are up-to-date on hepatitis B (HepB) 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 hepatitis B (HepB) vaccines Denominator: All children 19-35 months of age	Baseline rates and state rates	90%	Monthly
VZV Vaccination Rate	The percentage of children 19-35 months of age who are up-to-date on chicken pox (VZV) 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 chicken pox (VZV) vaccines Denominator: All children 19-35 months of age	Baseline rates and state rates	90%	Monthly
PCV Vaccination Rate	The percentage of children 19-35 months of age who are up-to-date on pneumococcal conjugate (PCV) 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 pneumococcal conjugate (PCV) vaccines Denominator: All children 19-35 months of age	Baseline rates and state rates	90%	Monthly
Missed Opportunity Rate	The percentage of patients that do not receive all eligible vaccinations when they present in the office	Chart Audit	Target Population: All patients due for a childhood vaccine ages 19-35 months without documented contraindications that were in the office during the reporting period Numerator: Patients ages 19-35 months that did not receive all eligible vaccines when they presented in the office Denominator: 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	Varies	Target Population: All patients due for a childhood vaccine ages 19-35 months Total number of patients 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, automatic text message, a recall facilitated through the IIS	Varies	Target Population: All patients due for a childhood vaccine ages 19-35 months who received a recall notification 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 (for each method): 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.

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.



- 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