SPECIAL ISSUE PAPER

The National Improvement Partnership Network: State-Based Partnerships That Improve Primary Care Quality

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ABSTRACT

Improvement partnerships (IPs) are a model for collaboration among public and private organizations that share interests in improving child health and the quality of health care delivered to children. Their partners typically include state public health and Medicaid agencies, the local chapter of the American Academy of Pediatrics, and an academic health care organization or children's hospital. Most IPs also engage other partners, including a variety of public, private, and professional organizations and individuals. IPs lead and support measurement-based, systems-focused quality improvement (QI) efforts that primarily target primary care practices that care for children. Their projects are most often conducted as learning collaboratives that involve a team from each of 8 to 15 participating practices over 9 to 12 months. The improvement teams typically include a clinician, office manager, clinical staff (nurses or medical assistants), and, for some projects, a parent; the IPs provide the staff and local infrastructure. The projects target clinical topics, chosen because of their importance to public health, local clinicians, and funding agencies, including asthma, attention-deficit/hyperactivity disorder, autism, developmental screening, obesity, mental health, medical home implementation, and several others. Over the past 13 years, 19 states have developed (and 5 are exploring developing) IPs. These organizations share similar aims and methods but differ substantially in leadership, structure, funding, and longevity. Their projects generally engage pediatric and family medicine practices ranging from solo private practices to community health centers to large corporate practices. The practices learn about the project topic and about QI, develop specific improvement strategies and aims that align with the project aims, perform iterative measures to evaluate and guide their improvements, and implement systems and processes to support and sustain those improvements. Since 2008, IPs have offered credit toward Part 4 of Maintenance of Certification for participants in some of their projects. To date, IPs have focused on achieving improvements in care delivery through individual projects. Rigorous measurement and evaluation of their efforts and impact will be essential to understanding, spreading, and sustaining state/regional child health care QI programs. We describe the origins, evolution to date, and hopes for the future of these partnerships and the National Improvement Partnership Network (NIPN), which was established to support existing and nurture new IPs.

KEYWORDS: maternal and child health; preventive services; quality improvement

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PRIMARY CARE CLINICIANS have unique and important opportunities to prevent or identify and mitigate the impact of genetic, physical, infectious, nutritional, developmental, behavioral, and mental health disorders in children and adolescents. To take best advantage of these opportunities, they must translate a burgeoning evidence base and ever-expanding number of practice guidelines into daily practice.[1–3] At the same time, their practices are adapting to the changing epidemiology of childhood disease, including decreasing incidence of severe infectious diseases, increasing numbers of children with chronic conditions, and growing prevalence of behavioral and mental health disorders.[4–7] They must also adapt to changing modes of care delivery, including observation units and expanding roles of hospitalists in providing inpatient care. In addition, primary care clinicians face increasing expectations to measure, report on, and continually improve the quality of care they deliver, despite the dearth of valid, actionable measures of pediatric primary care. Further, practices face new requirements to use electronic health records and to do so meaningfully, and they are increasingly expected and incentivized by payers to transform their practices into patient-centered medical homes.

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But changing practice, and assuring that changes are improvements, is hard work—likened to fixing a bicycle while riding it*—for which few clinicians have been trained and few practices have the needed time, expertise, or financial resources. Transforming practices toward patient-centered care and population management will require new skills, tools, and incentives. Desire for guidance and support in addressing these changes contributes to the increasing receptiveness of primary care practices to acquisition by hospitals and health systems. However, those systems tend to focus on the costs of adult chronic disease and allocate few resources to transforming pediatric primary care. Most primary care pediatric practices, both independent and owned, need help to improve care and meet the demands of patients, families, payers, regulators, and society.

Numerous stakeholders share primary care clinicians' interest in improving the quality and outcomes of children's health care. Collaboration between public health agencies and primary care practices could enable progress toward long-elusive goals such as improving immunization delivery, developmental screening, referral to early intervention (EI), and risk reduction in adolescents. Similarly, through collaboration, state Medicaid agencies and other payers might find solutions to stubborn problems with primary care access for their enrollees and assuring that they receive best care.[8] Academic health care institutions, children's hospitals, and health care delivery organizations accomplish much within their own systems, but lack of coordination and engagement with the primary care community limits their ability to impact health outcomes broadly. Local professional organizations, such as chapters of the American Academy of Pediatrics (AAP),[9] could find in such collaborations ways to assist their membership in improving care and providing the evidence thereof that is now required for Maintenance of Certification (MOC) by the American Board of Pediatrics[10] and others.

These 4 stakeholder groups—public health, Medicaid, professional organizations, and academic centers—serve as the core partners of several pediatric improvement partnerships (IPs) that have been established over the past 13 years to assist primary care clinicians and their practices in improving the care they deliver and meeting some of the myriad demands they face. Here we describe the IPs and their origins, evolution to date, and hopes for the future and introduces the National Improvement Partnership Network (NIPN), which was established to support existing and nurture new IPs.

IMPROVEMENT PARTNERSHIPS

The IPs described below aim to be durable state or regional collaborations among public and private partners. They work with primary care practices to improve health care delivery, using quality improvement (QI) science and systems-based approaches. The IPs foster and support the development of local infrastructure and capacity for practice-based QI.

The first of these IPs, the Vermont Child Health Improvement Program (VCHIP), was established in 1999 by the following groups:

- University of Vermont Department of Pediatrics, which serves as its administrative home.
- Vermont Department of Health (EPSDT program).
- Vermont Chapters of the American Academy of Pediatrics and American Academy of Family Physicians.
- Department of Vermont Health Access (Medicaid).
- Vermont Agency of Human Services, Banking, Insurance, Securities and Health Care Administration (Vermont's insurance regulatory commission).
- Three Vermont private insurers.

VCHIP's mission is "to optimize the health of Vermont children by initiating and supporting measurement-based efforts to enhance public and private child health practice." VCHIP adapted the Institute for Healthcare Improvement's Breakthrough Series[11] learning collaborative and the Model for Improvement[12] to guide its work with pediatric primary care practices across Vermont, initially targeting delivery of preventive services. Word of VCHIP's work and success in engaging practices in improving care led other states to seek their counsel and to develop similar programs. The term "improvement partnership" was coined to describe the intent and framework of such organizations.

With guidance and assistance from VCHIP leaders, the Utah Pediatric Partnership to Improve Healthcare Quality (UPIQ) and Envision New Mexico: the Initiative for Child Healthcare Quality (Envision) were established in 2003 and 2004, respectively. In addition to the core IP partners, UPIQ's charter members included the state's QI organization and a vertically integrated health care delivery system's primary care clinical program and pediatric continuing medical education organization. Envision added among its charter members a school-based health system.

Beginning in 2005, the Commonwealth Fund provided funding to enable VCHIP to assist other states in developing pediatric IPs. By 2010, VCHIP had provided technical assistance and limited start-up funding to 10 states. That same year Vermont was awarded a Children's Health Insurance Program Reauthorization Act of 2009 (CHIPRA) Quality Demonstration grant (in partnership with Maine) that includes support to provide technical assistance to new and existing states and to evaluate the effectiveness and impact of IPs as a sustainable model for improving child health care quality. As of 2012, an additional 6 states have developed IPs and 5 more are exploring possibilities (Table 1). The current levels of IP activity are categorized as pre-IP (in development), active, or inactive (no sustained partnership activities for the past 2 to 3 years).

An online survey was conducted of 10 IPs in 2010 to assess the impact of their work in policy and practice. In September 2012, 19 IPs were asked for data about their

*This simile was originated by Jeanne McAllister and Carl Cooley of the Center for Medical Home Improvement.

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Table 1. States and Improvement Partnerships

State	IP name	Year established	AAP Chapter	State Public Health	Medicaid	Academic Institution	Healthcare Delivery System	Children's Hospital or Medical Center	AAFP Chapter	State Human Services	State Mental Health	State Education	Indian Health Services	Parent Advocate	Advocacy Group	Quality Improvement Org.	Managed Care Organization	Private Insurer	Other Partners	Website
			Core Partners																	
VT	Vermont Children's Health Improvement Program (VCHIP)	1998	X	X	X	**X**	X	X	X	X	X			X				X		www.vchip.org
UT	Utah Pediatric Partnership to Improve Healthcare Quality (UPIQ)	2003	X	X	X	**X**	X		X					X	X	X	X	X	[1]	www.upiq.org
NM	Envision New Mexico	2004	X	X	X	**X**	X			X			X		X		X			www.envisionnm.org
DC	DC Partnership to Improve Children's Healthcare Quality (DC-PICHQ)	2005	X	X	X	X	X	**X**						X			X		[2]	www.dchealthcheck.net/resources/DC/DCPICHQ
AZ	Best Care for Kids	2005	**X**	X	X		X	X					X					X		www.azaap.org/Best_Care_for_Kids
MN	Minnesota Child Health Improvement Partnership (MNCHIP)	2007	**X**	X	X		X							X	X			X		www.mnaap.org/projects/improvementpartnership.htm
OH	Best Evidence for Advancing Childhealth in Ohio NOW (BEACON)	2007	X	**X**	X						X				X				[3]	www.odh.ohio.gov/landing/beacon/beacon.aspx
OR	Oregon Pediatric Improvement Partnership (OPIP)	2010	X	X	X	**X**	X		X						X				[4]	www.oregon-pip.org
NY-Bronx	Bronx Ongoing Pediatric Screening in the Medical Home (BOPS)	2010	X	X		**X**	X				X									
ME	Maine Child Health Improvement Partnership (ME CHIP)	2011	X	X	X	X	X	X	X	X	X			X	X	**X**				www.mainequalitycounts.org
IN	Child Health Improvement Partnership for Quality in Indiana (CHIP IN)	2011	X	X	X	**X**			X						X		X			
IA	Partnership to Improve Child Health in Iowa (PI CHI)	2011	**X**	**X**		X	X		X	X		X		X	X					www.iowapeds.org/pi-chi.asp
ID	Idaho Health and Wellness Collaborative for Children (IHAWCC)	2011	X	X	X			**X**	X											www.idahohawcc.org
MD	Maryland Pediatric Improvement Partnership (MPIP)	2012	**X**	X	X	X	X				X									
NJ	New Jersey Pediatric Council on Research and Education (PCORE)[5]	2012	**X**	X	X	X	X	X		X	X			X		X	X	X		www.aapnj.org
	Inactive States																			
	NY	2005		**X**																
	RI	2005		**X**																
	WA	2005		**X**																
	MI	2007			**X**															
	OK	2007				**X**														
	WV	2007	**X**																	
	Pre-IP States																			
	CT, AR, SC, NH, AL																			

X **Bold**/shaded indicates Administrative Home

[1] CME organization, independent parent advisor
[2] Regional provider network
[3] Department of Job and Family Services, Ohio Business Roundtable, and others (see website)
[4] Child Health Director, Oregon Health Authority Director
[5] PCORE established 1999, joined NIPN 2012

programs, including basic program information, their partners, staffing, funding sources, current and completed QI projects, and technical assistance needs. IPs were asked to report on activities from January 2010 through September 2012. Thirteen programs (68%) responded (11 active and 2 pre-IP); 6 (32%) did not respond (5 inactive and 1 pre-IP) (Table 2).

IP STRUCTURES AND APPROACH

Table 1 lists the states, their programs, year established, partners, and which partner serves as the administrative home. This home typically provides a stable base for hiring and supporting staff, an office, a phone, e-mail, and a financial system. Available funding and its duration are major determinants of the nature and size of an IP's staff. Table 2 details the ranges of staff among IPs as reported in 2012. In smaller IPs, personnel may be mostly part time, and a staff member will often serve multiple roles. In large IPs, however, staff are more likely to be full time and have focused job descriptions. Specific projects may involve additional personnel, though they may be unpaid volunteers, temporary employees, or staff borrowed from the home institution; further, they may receive a small stipend or honorarium (as for expert faculty). The IP's partners, particularly its administrative home institution, often provide substantial in-kind support by fulfilling a range of roles.

IPs provide the local support, expertise, and infrastructure to guide and assist pediatricians, family physicians, and their staffs in implementing QI through projects led by the IPs. Of the several modalities used, the most common is a QI learning collaborative that involves a team from each participating practice. Another approach used is academic detailing—that is, working with individual practices and delivering all interventions on site. Table 3 lists the topics of current and completed projects conducted since January 2010. Projects may be discrete, occurring over a limited time (usually 9 to 18 months) or may continue for years, often with sequential learning collaboratives that address different aspects of a topic. For example, Vermont's Youth Health Improvement Initiative has been in place for over 10 years, but its focus varies year to year according to the priorities of a large group of stakeholders.[13–16] Although IPs conduct their work in primary care practices, some have also engaged school nurses, obstetricians, hospitalists, and subspecialists.

TOPIC SELECTION AND FUNDING

The choice of topic for a project may be prompted by a grant offering, a national project seeking local partners, interests of IP partners, or local needs. Funding entities often determine the condition to be targeted and/or the goals for a project. Table 4 provides a list of funding sources to date. State health department partners may offer ideas related to evidence of poor health outcomes; clinical experts may offer to lead a project to speed implementation of new guidelines; or a needs assessment survey of primary

Table 2. Staffing per Improvement Partnership, as Reported in September 2012

Characteristic	Range	Median	Mean
No. of staff (n = 11)			
Total full-time staff	0–27	3	6
Total part-time staff	2–64	3	9
FTE by function (n = 10)			
QI coaching	0.1–5	1.2	1.6
Evaluation	0–16	0.4	2.1
Operations/administration	0–8	0.9	1.8
Project management	0.1–20	1.3	3.4
Overall	0.3–45	4.4	9.9

FTE = full-time equivalent; QI = quality improvement.

care practices may stimulate development of a project. Partnering private insurers, with their own QI goals, often want to focus on Healthcare Effectiveness Data and Information (HEDIS) measures for primary care.

PROJECT IMPLEMENTATION

After selection of a topic, local and often national experts are sought to guide development of the curriculum. Interested partners, other stakeholders, and relevant local agencies and service providers are also engaged to help plan and implement the curriculum, tailoring it to local needs, resources, and priorities. The IP staff work with the experts and sometimes a planning committee to design the intervention, recruiting strategy, educational components and materials, practice tools, and quality measures to be used by all participating practices.

As the curriculum is developed, applications for continuing medical education credit and for American Board of Pediatrics (and, for some projects, Family Medicine or other specialty boards) MOC credit will be prepared and submitted by IP staff with project leader support. The Figure shows the American Board of Pediatrics–approved projects by topic area across the IP states completed or current since January 2010.

Practices are recruited through a variety of methods. Interested clinicians are provided with detailed information and asked to commit to participating with a team from their practice. Practice teams typically include 1 or more clinicians, an office manager, clinical staff (medical assistant or nurse), and, for some projects, a family partner (parent of a child in the practice, usually with a condition relevant to the project). The practice is then asked for additional information and will receive a call or site visit from an IP staff member to confirm their commitment, explain what to expect from the IP, assess the team's knowledge and readiness, and provide focused teaching to accelerate their preparation.

A learning session involving all practice teams typically kicks off a project and may be conducted as a face-to-face meeting in a central location or over the internet using Web conferencing tools. Educational content includes topic-specific scientific evidence or guidelines and practical applications thereof, QI theory and methods, measurement, patient-/family-centered care, and information about local community services and other resources. Quality measures generally include 2 or 3 that are collected by all participating practices, reflecting guidelines or processes deemed necessary to achieve the desired health outcomes. In addition, each practice may select measures specific to their planned strategies or changes. Table 5 provides examples of measures and results achieved by practices in past projects. Publications by various IPs provide further details of the measures used and results achieved.[13,16–23]

IP support continues during the action period that follows the kickoff through periodic phone calls, Web conferences, practice-to-practice peer interaction, and on-site coaching visits that enable problem solving, cheerleading, reinforcement of learning and QI methodology, and incremental team building. A baseline assessment is performed for all projectwide and practice-specific measures, usually through chart review (paper or electronic). The baseline and monthly measures are compiled and the results returned with comparisons across

Table 3. National Improvement Partnership Network (NIPN) Improvement Partnership Process Evaluation, Spring 2012

National Improvement Partnership Network (NIPN)
Improvement Partnership Process Evaluation, Spring 2012

*Closed & Current Quality Initiatives by Common Topics

	Asthma	Attention Deficit/ Hyperactivity Disorder (AD/HD)	Autism	Children and Youth with Special Health Care Needs	Developmental Screening	Immunizations	Late Pre-term Infants	Medical Home	Mental/ Behavioral Health	Newborn Screening	Obesity	Preventive Services
Arizona					X			X				X
Idaho	X							X				
Indiana	X							X				
Iowa				X			X	X	X			
Maine			X		X	X						X
Minnesota					X				X			
New Mexico	X				X			X	X		X	
New York, Bronx		X	X		X			X	X	X		X
Ohio	X		X		X		X		X		X	
Oregon				X	X			X	X			
Utah			X			X		X	X	X	X	
Vermont			X	X	X		X	X	X		X	X
Washington DC					X	X		X			X	X

*Inclusion criteria: Closed and current projects that were active as of January 2010 or were conducted since this date were included in the evaluation

Table 4. Funding Sources

Funding Sources*

Federal	State	Other
CMS	Title V/CYSHCN	Foundations
CHIPRA Demo	Medicaid	March of Dimes
Federal Medicaid Administrative Match	Department of Health	Commonwealth Fund (including ABCD, ABCD II)
	Managed Care Organizations	Robert Wood Johnson Foundation
SAMHSA	Insurers	First Things First (AZ)
SAMHSA Project LAUNCH	EQRO/QIO	Church of Jesus Christ of Latter-day Saints Foundation
SAMHSA Garrett Lee Smith Memorial State/Tribal Youth Suicide Prevention grant	State Mental Health	Utah Medical Association Foundation
SAMHSA Child Mental Health Initiative		Marriner S. Eccles Foundation
SAMHSA National Child Traumatic Stress Initiative Community Treatment and Services Centers grant		AAP Chapter
		AAP Community Access to Child Health (CATCH) grant
HRSA		Academic Institution
HRSA Early and Continuous Screening in the Medical Home Cooperative Agreement		Department of Pediatrics
HRSA Combating Autism grant		Department of Psychiatry
HRSA/MCHB Emergency Medical Services for Children (EMSC) Program		Department of Family Medicine
HRSA/MCHB Universal Newborn Hearing Screening (IA)		Department of Obstetrics/Gynecology
HRSA/MCHB Effective Follow-up in Newborn Screening (UT)		College of Medicine
HRSA/MCHB State Implementation Grant for Systems of Services for CYSHCN (IN) - 'D70'		University Foundation (IN)
HRSA/MCHB Medical Home Implementation Grant		Children's Hospital (DC)
HRSA/MCHB State Implementation Grants for Improving Services for Children and Youth with ASD		Children's National Health Network (DC)

* some funding is primary to the IP, other is secondary though a subcontract or grant to the IP for a specific activity

AAP - American Academy of Pediatrics
ABCD - Assuring Better Child Development
ASD - Autism Spectrum Disorder
CYSHCN - Children and Youth with Special Health Care Needs
CMS - Centers for Medicare & Medicaid Services
CHIPRA - Children's Health Insurance Program Reauthorization Act
EQRO - External Quality Review Organization
HRSA - Health Resources and Services Administration
MCHB - Maternal and Child Health Bureau
QIO - Quality Improvement Organization
SAMHSA - Substance Abuse and Mental Health Services Administration

participating practices and feedback on progress. A final chart review is performed at the end of the project to assess overall improvement.

Throughout the project, and particularly as it nears completion, teams are asked to plan for spread and sustainability of their improvements. Spread involves engaging other clinicians in their practice and/or working with other practices in the community. Sustainability involves developing processes and policies to perpetuate the improvements, remeasuring periodically to assure that improvements are maintained, and occasional retraining of team members and training of each newly hired team member.

NATIONAL IMPROVEMENT PARTNERSHIP NETWORK

NIPN was established in July 2009 to support existing IPs and nurture the development of IPs in other states. NIPN's membership is detailed in Table 1. NIPN's leadership group, comprising 5 IP leaders, meets monthly

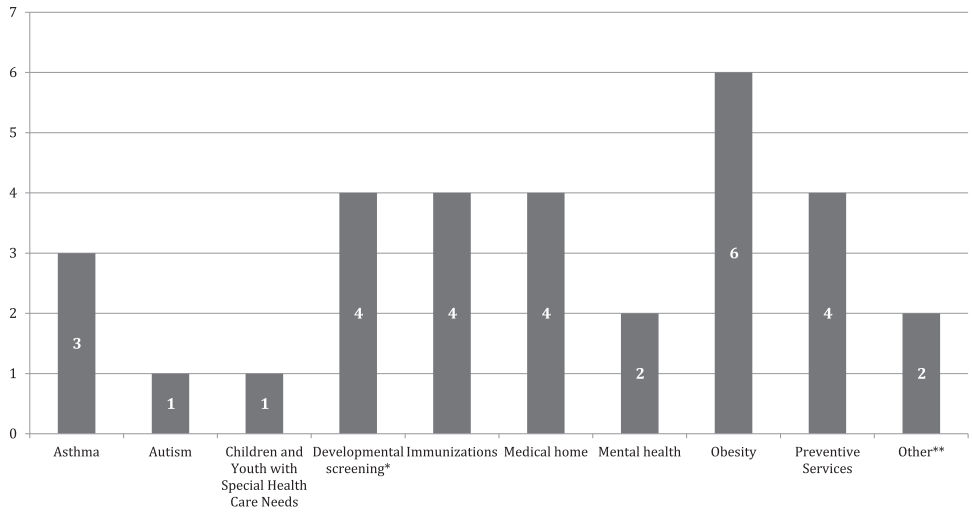

Figure. *Total number of MOC QI projects by topic, active or completed within the past 2 years (n = 12 states).*

Table 5. Sample Measures From Selected Improvement Projects, Numbers of Charts Assessed, and Results of Baseline and Final Assessments

Project Target (No. of Participating Practices) Measures	Baseline Measure, Mean Across Practices (Range)	Final Measure, Mean Across Practices (Range)
Developmental and Autism screening (n = 37)*		
Proportion of WCC visits (9, 18, or 24/30 mo) with 1 developmental screening performed	20.9% (0–100%)	50.7% (0–100%)
Proportion of WCC visits (18 or 24 mo) with 1 autism screening performed	19.8% (0–82.7%)	46.4% (0–100%)
Obesity prevention (n = 6)†		
Proportion of charts where BMI% was documented ‡	41.7% (0.0–76.7%)	99.4% (96.4–100%)
Proportion of charts where physical activity and/or nutrition counseling was documented‡	41.2% (0.0–66.0%)	83.8% (70.0–100%)
Proportion of charts where a self-management goal was documented‡	14.2% (0.0–60.0%)	60.7% (28.6–100%)
Proportion of charts where weight category diagnosis was documented‡	25.7% (0.0–70.0%)	92.7% (81.8–100%)
Immunization QI MOC initiative final measure§		
Percentage of children 19–35 mo old with complete 4:3:1:3:3:1 (DTaP:IPV:MMR: HIB:HBV:VAR) based on CDC CoCASA survey	71% (59–82%)	87% (82–94%)
Asthma in the Medical Home Learning Collaborative (n = 6)‖		
Proportion with an asthma action plan in chart	20.5% (0.0–56.7%)	60.7% (30.0–86.7%)
Proportion of patients with asthma who have education for the proper use of spacer device	24.4% (0.0–53.0%)	57.0% (30.0–80.0%)

*VCHIP Project, 18 months' duration, data as reported in Barry S, Paul K, Aakre K, et al. Final report: developmental and autism screening in primary care. Burlington, Vt; January 2012.

†Data from 6 clinic sites participating in the Envision New Mexico Pediatric Overweight Program, 2009 through 2011. Data represent results from a sample of randomly selected medical records from well-child checks (WCC) in 2- to 18-year-olds.

‡Number of charts reviewed for BMI% and counseling (n = 199). Documentation of "Self-Management Goal" and "Weight Category Diagnosis" were completed on a subset of 34 charts where BMI% was ≥85%. Current standards would require weight category diagnosis to be documented for all patients, regardless of BMI%.

§DC PICHQ-Children's National Immunization QI MOC Initiative Final Measure: Percentage of children 19–35 months old at 6 Children's National Medical Center primary care health centers with complete 4:3:1:3:3:1 (DTaP:IPV:MMR:HIB:HBV:VAR) based on CDC CoCASA survey (Comprehensive Clinic Assessment Software Application). Patient cohort: All children 19–35 months assigned to CNMC health centers based on DC DOH Immunization Registry.

‖Asthma in the Medical Home Learning collaborative and was funded through a grant to the Indiana State Department of Health from the Maternal and Child Health Bureau. A medical home learning collaborative was conducted and as the chronic condition management chose to do an asthma minicollaborative at the end of the grant, which lasted 6 months.

by conference call, and the steering committee, which includes representation from state Title V, Medicaid, and health departments, meets bimonthly. Based in Vermont, NIPN provides its members with ready access to experience-informed strategies, tools, and measures for implementing QI in practices compiled in an online Technical Assistance Resource Center; opportunities to share ideas, challenges, and successes; access to faculty and staff to support network activities and IP needs; and ongoing learning. NIPN activities include the following:

- An electronic mailing list (Listserv) for IP leaders and staff to ask questions, seek resources, share ideas and find solutions that have been effective elsewhere.
- Monthly all-IP conference calls that focus on specific topics of interest and provide a forum for discussion of NIPN priorities and planning future activities and presentation of individual IPs' projects and results.
- An annual operations training (ops) meeting that targets operational issues (how to run and administer an IP program) and QI coaching (QI strategies for working with primary care practices).
- A National Meeting focused on policy, leadership, and sustainability (held most years).

States that are considering developing an IP are included on the NIPN Listserv and invited to the all-IP conference calls and the ops meeting. Recognized IP programs receive access to the Technical Assistance Resource Center, funding support to attend the ops and national meetings (as available), and are included in NIPN presentations, marketing, and communications materials and other network publications. Criteria for formal recognition as an IP are listed in Table 6.

LESSONS LEARNED

Over the past 7 years, we have learned a number of lessons that may help IPs find success and avoid pitfalls. These build on a framework for IP development that was created using qualitative methods.[24] Gathered from the surveys and through annual meetings, site visits to states, conference calls, strategic planning, and NIPN leadership discussions, these lessons guide NIPN's ongoing work, are freely shared with member IPs, and contribute to

Table 6. Criteria for Formal Recognition as an IP

- Broad-based partnership that includes:
  - Local chapter of the American Academy of Pediatrics (AAP),
  - State Medicaid agency.
  - State health department.
  - One of the following: academic institution, children's hospital, children's health care delivery institution.
- Name and logo, which establishes an identity for the IP.
- Lead contact.
- Practice-level QI experience:
  - Tier 1: Experienced in conducting QI in practices.
  - Tier 2: Planning but have not yet conducted QI in practices.

IP = improvement partnership; QI = quality improvement.

a continuously expanding base of knowledge and experience in practice-based QI.

Primary Care Practices Need Skills, Structure, and Facilitation to Improve the Care They Provide to Children

Collectively, NIPN's member IPs have worked with hundreds of pediatric and family medicine practices. The more established IPs (>10 years in existence) have engaged between 64% and 90% of their states' pediatric practices and up to 50% of family practices in at least one QI project. Practice leaders indicate that they participate because they want to improve care but lack key resources needed to implement QI. The missing resources, as identified by both the leaders and IP practice coaches, vary by practice but commonly include time, effective leadership, vision, teamwork, written policies, regular meetings, and understanding of QI methods and how to measure care and use data to drive change. Financial resources to hire staff and/or experts to help with QI are also quite limited. Many practices find the "at the elbow" support and facilitation provided in their office and by phone/e-mail by IP staff (usually at no direct cost to the practice) essential to their accomplishing QI.

Through their close work in and with practices, IP practice coaches learn which interventions are likely to help most practices and that most interventions require adaptation to accommodate the unique strengths and weaknesses of each practice. Regular, usually weekly, meetings with agendas and follow through on action items are critical to maintaining momentum. Some practices prefer more frequent short meetings (often called huddles), while others do best with longer meetings that allow for more discussion. Many practice teams need help in defining clear, accomplishable improvement aims and determining how to measure progress toward them. Indeed, few practices have measured any aspect of their own performance, though many receive reports from insurers and immunization programs, which are rarely acted on and often ignored.

Amid the many other demands of clinicians and their office staff, little time is available for training in QI methodology. Yet their desires for improvement are often vast. The use of Plan–Do–Study–Act (PDSA) cycles provides a structure for effecting small, incremental changes and seems sufficient for most practices to accomplish their desired improvements, though often the end result differs from their original aim. Very few practices are interested in learning more complex QI strategies. Practices are similarly uninterested in complex data, but they are often highly motivated by data that reflects poor current performance and by data that shows better performance by other practices. However, few practices reach out to better performers to learn from them. The exception has been learning from others how to use electronic medical records more efficiently, though very few practices effectively tap these records' potential for measuring quality.

IPs Impact Care as No Single Agency Can

A unique feature of IPs is the connection they provide for their public partners to the primary care delivery system. Public health and Medicaid have had little capacity to effect change at the practice level. Public health, with its oversight of population health, is continually looking for effective ways to respond to population needs and to optimize the use of scarce human resources and limited funding. Medicaid is federally mandated to maintain a focus on quality but is constrained in its ability to incentivize practices; further, as a payer, its motives may be suspect. IPs serve as vehicles for their public partners to translate state priorities into action by implementing changes at the practice level. Credit for resulting improvements is legitimately shared, reflecting the key roles of the public agencies and demonstrating their success. IPs are enabling collaboration toward shared aims among traditionally siloed payers, public agencies, and primary care providers.

IPs Convene Disparate Stakeholders to Align Priorities and Find Solutions for Common Problems

Through collaboration, IPs can find synergies within a specific improvement project to advance the various strategic priorities of its partners and improve health care delivery for children. For example, Oregon's IP participated in the ABCD (Assuring Better Child Development) III initiative, funded by the Commonwealth Fund and facilitated by the National Academy for State Health Policy (NASHP). The project focused on coordinating the care of children at risk for developmental delays between EI and primary care clinicians and served as a Performance Improvement Project (PIP) for 8 of the state's Medicaid managed care organizations (MCO). The IP facilitated an advisory group, consisting of state Medicaid, public health, EI, developmental pediatricians, primary care clinicians, parents, and MCO representatives. Through their collaboration, the project met multiple partners' needs related to improving developmental screening, referral patterns to community resources, and communication between primary care practitioners and EI.

IPs convene their organizational partners to develop shared strategies and common solutions, thereby minimizing redundant efforts and ultimately resulting in broader impact. Success in achieving both shared and individual goals keeps partner organizations engaged in the IP.

Box 1. New Mexico[17,18]

Envision NM is a QI program of the University of New Mexico Health Sciences Center. It was established in 2006 as a collaborative project between the University, the New Mexico Medicaid Program, New Mexico Department of Health and the New Mexico Pediatric Society with the goal of improving health care quality for children in a state challenged by its rural nature and the poverty of the population.

The Pediatric Overweight Quality Improvement Initiative (POW) began in 2006 with a cohort of 20 pediatric practices and school-based health centers participating. Program elements include training in the Model for Improvement, use of PDSA, tracking quality measures including HEDIS, and training in motivational interviewing methods.

A unique aspect of Envision is the use of a telehealth clinic modeled on the Extension for Community Healthcare Outcomes (ECHO) project. ECHO uses the resources of the academic medical center to help rural practitioners treat patients with complex chronic conditions. The Childhood Overweight Medical Management Telehealth Clinic (COMM-TC) was developed to help practitioners care for patients with comorbid conditions related to their obesity. The clinic draws on the sub-specialty resources of the University to provide multi-disciplinary case consultation to rural practitioners.

POW is accredited by the American Board of Pediatrics and the American Board of Family Medicine for Maintenance of Certification, Part 4.

Box 1 (New Mexico) details an example of an IP convening stakeholders to align priorities.

IPs Bring Expertise and Experience to State Policy Discussions

Some IPs have built on their collaborations and QI successes to influence state policy making. These IPs serve as a conduit for perspectives from primary care and the IPs' partners to guide policy responses to the Affordable Care Act and local issues. IPs can inform payers and regulators of practice-level barriers to improvement and work collaboratively to remove them. Similarly, IPs translate public health priorities and payment reform initiatives into improvement aims at the practice level.

Oregon's IP (OPIP) activities are guided by a steering committee composed of 8 key partners (Table 1). OPIP coordinated feedback from those partners to inform deliberations on metrics and incentives to be used by the state's emerging coordinated care organizations. One result was the selection of adolescent well visits as a measure, aligning the following:

- State Medicaid's concern about disparities in adolescent well visits between commercial and publicly insured populations and the correlation between missed well visits and mental health and substance abuse problems.
- Public health's strategic priority of suicide prevention.
- American Academy of Pediatrics (AAP) chapter members' need for training in screening for adolescent depression at well visits.

OPIP also provided recommendations derived from its experience in helping practices implement medical home standards to a working group developing a statewide definition of medical home (Box 2, Oregon). Other IPs have influenced payment for specific services (such as developmental screening) to support primary care practitioners in delivering key components of quality care.

Learning From the Successful and Unsuccessful States

Despite success in improving care through individual projects, some states have been unable to sustain their activities and their IP, usually as a result of a lack of ongoing funding after project-specific funding was depleted. Support for a leader or key individual responsible for oversight of IP activities and for seeking further funding is vital to survival. There appears to be a strong association between engaging a broad base of partners, at least one of which provides stable support for infrastructure and leadership, and IP success.

Of the IPs with an academic institution or children's hospital as their administrative home, 8 remain active (including the 4 oldest IPs), and only 1 is currently inactive. Faculty in these IPs have found support to focus on child health QI and opportunities to engage in local and state initiatives in support of the academic mission. The institution often provides start-up support or bridge funding between projects and access to expert collaborators, as well as expertise in grant writing, statistical analysis, and financial/grants management. The credibility of the academic institution or children's hospital has seemed helpful for some IPs in seeking partners and recruiting practices. Academic homes also bring challenges, in the form of regulation, bureaucratic caution, and competing expectations of IP leadership and staff, which may decrease an IP's nimbleness.

NIPN Provides a Forum for Sharing and Learning Across IPs

For the past 3 years, an average of 12 to 15 states have joined the monthly all-IP conference calls to present their work or discuss a QI topic. The calls are open to the leaders and staff of all IP sites. Topics discussed include application of quality measures, publishing QI work, parent participation, preproject readiness activities, data collection, and hiring and training QI coaches. Participation in annual

Box 2. Oregon

The Oregon Pediatric Improvement Partnership (OPIP) was founded in 2010 at Oregon Health & Sciences University in response to the growing need for collaboration and partnership around both QI and health reform. While still in their pre-IP phase, the founding partners and leadership of OPIP ran several successful QI projects, including work in developmental screening through the Oregon Pediatric Society. By pulling together partners in private practice, public health, Medicaid, and local EI contractors, the Ongoing Pediatric Screening Tools and Referral Training (START) project was able to demonstrate changes in screening for developmental delay as well as referral patterns, as evidenced by a 58% increase in physician referrals to EI within the first 3 months of piloting the project, as well as a similar increase in children under the age of 1 year with an individualized family service plan.[33]

The leadership of OPIP had a history of involvement in policy work prior to the formation of the IP, and retains a commitment to using lessons learned in working with front-line practices during QI initiatives to inform the policies that impact primary care. Using these lessons allows for the creation of policies that help support primary care practitioners to deliver high quality health care.

One area of focus is participation in the state's Patient Centered Primary Care Home (PCPCH) Pediatric Standards Advisory Committee, as well as the ongoing PCPCH Standards Advisory Committee.[34] OPIP is currently conducting a learning collaborative of 8 practices engaged in medical home transformation, using the Medical Home Index-RSF and elements of the NCQA 2011 Patient Centered Medical Home indicators as measures for the project; the recent iteration of the PCPCH Standards includes revisions based on findings working with these practices.

Similarly, OPIP has provided the Oregon Health Authority with recommendations for maintaining a maternal child health focus in the development of the emerging Coordinated Care Organizations. Leadership has also participated in the Outcomes, Quality & Efficiency Metrics Workgroup and the current Metrics & Scoring Committee; the work of this latter group is to develop the measurement framework for assessing the coordinated care organizations. The recommendations to these groups are heavily informed by working with front-line practices, and are additionally reflective of discussions and consensus of the partnership inherent within OPIP's governance.

meetings, conference calls, and Listserv correspondence and use of the online technical assistance center resources are strong predictors of IP sustainability.

The IP Approach May Not Be Applicable to All States

We know of a few state or local child health QI organizations that have developed without NIPN's assistance. The Pediatric Council on Research and Education (PCORE) was established in 1999 as the QI arm of the New Jersey chapter of the AAP. PCORE has sponsored a number of projects focused on topics that include child abuse and neglect, immunizations, oral health, and autism. Their leadership has participated in recent NIPN activities. The Colorado Children's Healthcare Access Program (CCHAP) was founded in 2006 and includes 30 organizations as collaborators. CCHAP accomplished its initial aim to expand access to pediatric care for Medicaid-insured children and is focusing on assisting practices in providing medical homes. Size may preclude some states, such as California, New York, or Texas, from developing a statewide IP. Regional or even city-based IPs, such as the Bronx Ongoing Pediatric Screening (BOPS) project, a NIPN member, may work better in very large, populous states.

Limitations and Challenges

The NIPN IPs have developed organically, resulting in organizations with several similarities in structure and funding but also numerous differences. They have taken root in academic medical centers, professional associations, public health departments, and other agencies. IPs have grown in places where there is grassroots leadership and willing partners. Their efforts have been supported through a patchwork of grants, donations, state and local contracts, and in-kind contributions. Despite what most IPs consider meager funding, the cost of what they do far exceeds what most practices would be willing to pay for the service. Nevertheless, these IPs have improved health care delivery in developmental screening, obesity, asthma, immunization, mental health, and newborn screening, as well as other areas, among participating practices.

The ability to measure the impact of IPs' efforts is limited by their varying structures, size, life span, and projects. Few IP projects have been published, partly because their limited funding precludes the rigorous evaluation required by journals. Indeed, most projects are accomplished without institutional review board involvement because they do not involve research as defined by the US Department of Health and Human Services (45 CFR 46.1029[d]).[25] However, absent robust evaluation, IPs will be unable to answer key questions, such as the following:

- How well and for how long will these improvements be sustained?
- How best can the improvements be spread within practices and throughout communities?
- How much ongoing help will practices need to maintain effective QI efforts and to address additional areas?

- Which QI interventions are most efficient and effective at improving care, outcomes, and cost at the primary care practice level?
- What is the return on investment for IP activities and over what time frame and across which sectors (health, satisfaction, education, employment) should that assessment be made?
- How can QI interventions be taken to the scale needed to impact state and national health outcomes?

NIPN and its member IPs hope to contribute to answering these questions.

IPs, NIPN, and the Future

Can primary care pediatricians and public health systems collaborate to address the 3-part aim for health care in the United States: improved experience of care, improved population health, and reduced cost?[26] QI is hard work, but in several states, IPs have successfully convened and leveraged multiple public and private stakeholders to improve the delivery of primary care to children. The core partners of most IPs include public health (particularly Title 5 and maternal and child health agencies), Medicaid, academic or children's health centers, and AAP chapters. IPs can translate public health priorities and payment reform initiatives into improvement strategies at the practice level. Similarly, barriers to improvement that are identified as IPs work with practices can lead to solutions at the payer and/or regulatory levels.

Through QI coaching and support, IPs reach front-line practitioners in an organized, practical, and meaningful fashion not easily attained by state Medicaid or public health agencies. Clinicians working with IPs learn to use practice-based, data-driven QI methodologies to measure and incrementally improve care while earning MOC and continuing medical education credits.[13,19–22,27] This learning is often extended to public partners as IPs engage their public health colleagues in improvement activities. Likewise, students (from medical professions and public health) often participate in and learn from IPs' QI activities. IPs can play a role in training the current and future Maternal and Child Health work force in QI.

IPs offer a vehicle for introducing, implementing, and evaluating existing and future care guidelines and quality measures in numerous practices across many states. This is a potentially fertile environment for community-based research in health care delivery, treatment effectiveness, and population health that leverages IPs' infrastructures, their participating practices, and their academic partners.[28] The increasing adoption of electronic health records, meaningful use data reporting, and emerging regional health information exchanges offer the potential for robust quality data aggregation, reporting, and research across broad populations.[29,30] Practice participation in community- or population-based research opportunities could be facilitated through participation in state-based improvement activities.[31]

As members of NIPN, 19 active and emerging state IPs are learning from each other, sharing ideas, and implementing similar child health QI initiatives. IPs offer infrastructure and access to primary care practices that could be used to pilot, evaluate, and improve child health measures, delivery, and outcomes in diverse settings across the nation. Data collection and analysis for IP projects are currently performed at the state level; however, multistate projects could share interventions, measures, and data to enhance the impact of each project and the generalizability of evaluation and lessons learned. Multistate projects would also allow comparison of differing approaches to similar projects and aims.

To date, IPs have focused primarily on implementation of individual projects and the resulting changes in care delivery and have not studied their impact on clinical or population-level outcomes. Rigorous measurement and evaluation of these state efforts and their collective impact will be essential to continually improving IPs' processes and to spreading and sustaining state/regional child health care QI programs.

NIPN's current activities are partially supported by a CHIPRA Quality Demonstration grant, slated to end February 2015. Lack of stable funding is a challenge for most of NIPN's member IPs. As increasing attention and resources focus on curbing costs incurred by chronically ill adult populations, funding for QI in pediatrics is likely to remain scarce at national, state, and health system levels. Limited funding for evaluation of their activities and the dearth of pediatric quality measures that are associated with compelling, short-term cost savings will leave IPs challenged to quantify the impact of their work and looking to health care reform to recognize the value of the QI and practice facilitation they offer.

Preliminary data support the viability and effectiveness of the IP model in engaging primary care practices and other key stakeholders in state-based child health QI. IPs could serve as a foundation for the development of enduring primary health care innovation networks, as proposed by Margolis and Halfon.[32] As the Centers for Medicare and Medicaid Services and states are increasingly challenged to finance and assure high-value care for all children, the network of state IPs offers a potential model and infrastructure for testing measures and strategies, and for improving primary care delivery.

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