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Online Supplementary Material

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http://www.annfammed.org/content/11/Suppl_1/S27

Supplemental Appendix 1. Contextual Factors Relevant for Understanding and Transporting Findings From Transforming Primary Care in North Carolina Study

Relevant Attributes, Actions, Culture, Activation/Motivation Across Multiple Levels	What Happened During Our Study	What Others Need to Know to Transport Study Elsewhere
Public policy	The roll-out of CMS's meaningful use of HIT initiative caused some practices to prioritize their efforts to understand population health and submit data via electronic means, which helped align missions between IPIP and the practices. NCQA recognition programs and PCMH certification attainment (and precursors to these certifications) were gaining popularity in communities in this time interval, thus also providing some motivation to engage in population management and QI. Practices seemed more interested in moving into the population health management domain with assistance from the IPIP coach and program. The MOC process entered into a new realm of requiring primary care clinicians to participate in QI activities to maintain their board certification. This requirement motivated the younger clinicians who were not "grandfathered" into older board expectations, and IPIP participation could fulfill the MOC part 4 requirement. Pharmaceutical companies were looking for new ways to engage with practices after policy changes within their industry. Medicaid network support was available via CCNC (human resources provided for case management and patient education for Medicaid patients).	The requirements will likely be similar in all states as long as the financial or other value added incentives are comparable.

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Community	There was a culture of QI in North Carolina and existence of chronic disease collaboratives in various settings across the state. North Carolina IPIP was aligned with and supported by local CCNC (Medicaid), North Carolina AHEC, Blue Cross Blue Shield, and medical societies. Some practices were more closely knit to their communities than others; practice staff and clinicians may be at work, church, or school with their patients. Within these communities, patients even seemed willing to want their clinicians to look successful by having their own clinical data improve. Other practices were less connected to their patient populations.	The degree of or time to outcomes improvement may vary in areas with less external support. Many practices had considerable support from the Medicaid network systems to provide self-management support to their patients. Relationships among practice staff, clinicians, and their patients need to be considered as this may affect both practice and patient motivation.
Health care system	Blue Cross reimbursement improved for demonstration of higher-quality care; the Medicaid network and multiple partners supported practice transformation. As multiple QI-like projects were rolling out during the same time interval, there was some confusion regarding which activities were specific to IPIP and which were associated with other projects.	PCMH designation in North Carolina was appealing for several practices and, if achieved, could enhance revenues, depending on payer mix. Despite the fact that many practices were involved in multiple projects, we believed that IPIP was one of those posing the lowest burden and could serve as a "ramp-up" project for other population-based care improvement initiatives.
Practice	Leaders in practice saw the value of focusing on population health. Strong "middle managers" facilitated change. Several practices converted to an EHR, which hindered data collection and QI activities. The level of engagement with IPIP varied greatly and was often critically dependent on a few key staff members or even the IPIP coach. We thus sometimes did not get to speak to the actual IPIP champion because of staff turnovers and had to rely on surrogates. Although using EHRs enabled some practices to report aggregate data, practices were generally unable to use EHRs to manage a population (eg, identify individuals with needed care and perform outreach and plan for them).	Different types of practice leadership styles may have affected how well the IPIP program was implemented. Some of our qualitative data regarding IPIP participation came from surrogate interviewees, which may have biased the qualitative findings.

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Patients	Practices varied greatly regarding their patients' health insurance coverage, educational levels attained, and other socioeconomic variables.	Patient financial constraints, ability to come to the office, and adherence could affect the degree of improvement in a practice.
Other key stakeholders: IPIP organization	The organization allowed for a wide range of practice engagement with the project and was not a one-size-fits-all program; it "met practices where they were." This flexibility allowed practices to participate in multiple different levels, which influenced cost estimates and likely outcomes. In some rare cases, the practice staff wanted the IPIP coach to be successful; thus, they were actually motivated to make practice behavior changes for the coach!	The flexibility, adaptability, and QI approach of North Carolina IPIP may be unique. Programs expecting higher (or lower) levels of participation fidelity may have different outcomes.
Other factors from theoretical model[a] guiding study	The QI counselors coached practices to succeed. Complexity of some of the IT systems changed over time, which affected the type of engagement and activities that coaches and practices focused on over time. Some practices had needs that were not part of the IPIP core improvement measurement strategy, but to build relationships and offer value added to practices, coaches may have not gotten to core elements until some time had passed.	Coaching is a key element for tailoring, guiding, and keeping practices on track. By being flexible with meeting practices needs, core activities that were measured may have been measured, but not specifically addressed. Other areas of focus (eg, implementation of open-access processes) were not part of the measurement schema, which may have biased the results either way, but hypothetically may have resulted in demonstrating less improvement in the outcomes measured than what could have been realized.
Economic environment	Practices were motivated to enhance revenue even if the reimbursements were relatively small in an environment of declining reimbursement for clinical services.	Degree of outcomes improvement may vary (positively or negatively) in a different financial environment.

AHEC = Area Health Education Center; CCNC = Community Care of North Carolina; CMS = Centers for Medicare and Medicaid Services; EHR = electronic health record; HIT = health information technology; IPIP = Improving Performance in Practice; IT = information technology; MOC = maintenance of medical board certification; NCQA = National Committee for Quality Assurance; PCMH = patient-centered medical home; QI = quality improvement.
[a] Domains of value commitment, performance crisis, power balance, leadership support, change agents, organizational capacity, program compatibility, complexity, observability, benefit, and transformational adoption of IPIP components and clinical outcomes.
Note: The following people worked together to identify the relevant contextual factors and to consider how they might have affected the internal and external validity of the study: Investigators: Katrina Donahue, Jacquie Halladay, Kristin Reiter, Shoou-Yih Lee, Madeline Mitchell, and Kimberly Ward; expert advisory panel: Warren Newton, Ann Lefebvre, Darren DeWalt, Beat Steiner, Sam Cykert, and Greg Randolph.

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Interpretation of How These Contextual Factors Affected What Happened During the Study and What Others Should Know to Transport/Reinvent the Findings in Their Contexts

The most important contextual element that needs to be considered when interpreting the outcomes of our study is the strong and widely supported culture of health care QI in North Carolina. One of the more prominent of these supportive organizations is CCNC. This organization invested decades of work to improve the health of North Carolina Medicaid patients and forged lasting partnerships with the North Carolina AHEC, academic medical institutions, third-party payers, and foundations to create this unique primary care environment. Leaders within these organizations saw the value of population health, care quality, and cost containment, and understood the need to provide direct QI resources to health care organizations. Several leaders of the practices that participated in the qualitative portion of our work were directly involved in conceptualizing and instituting the IPIP program via their affiliations with such organizations; thus, they had vested interest in the success of IPIP and were motivated to implement the program.

Practices had various incentives to participate that grew out of the alignments of the above organizations. At the time of IPIP implementation, there were organizations, such as Blue Cross Blue Shield, a major private payer in North Carolina, that were interested in reimbursing practices for higher-quality care. There was support and backing from all the major medical societies in the state and the ability to get maintenance of certification for specialty boards.

Also, the impact of the practice coaches on the success of IPIP cannot be overstated. These professionals were invaluable to the practices' ability to effectively implement the program by respectfully guiding practices through the key elements of practice change and process improvement. By bringing vetted tools and resources to practices, they did not have to put the time into developing these resources de novo. Additionally, flexibility was important for the coaches; they met practices "where they were" and allowed practices to participate at multiple levels of engagement; however, this flexibility can affect early program outcomes in clinical improvement.

When trying to transport/reinvent findings elsewhere, context is important. Many of the incentives will be the same and available (eg, maintenance of certification for medical boards, meaningful use, insurers). It is important to align with these programs and local societies. Internally, it is important to focus efforts to identify practices that see the value of population health. Finally, others should consider using practice coaching to help keep practices on track with making office system changes, and working with and responding to their data.

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