# Using Human Centered Design and Quality Improvement Strategies to Drive Health Innovations and Improve Outcomes:

## A Technical Brief on the U.S. Border States CoIIN Initiative

## Background

From 2017-2020, the Border States CoIIN (*Collaborative Improvement & Innovation Network*) Initiative convened multilevel stakeholders in Arizona, California, New Mexico and Texas (the U.S./Mexico Border States) to achieve a common aim: to increase early prenatal care utilization by 10% among women in targeted impact areas in these four Border States through the development of place-based improvement strategies that address the social determinants of health (SDOH). The CoIIN was funded by a grant from the Health Resources and Services Administration's (HRSA) Maternal and Child Health Bureau (MCHB) and implemented by Project Concern International (PCI), a Global Communities Partner. First trimester prenatal care is a national Healthy People 2030 objective, and a national clinical performance measure for federal health center funding.

The Border States CoIIN facilitated a unique model that blended collaborative learning, innovation and quality improvement, and built the capacity of teams to apply these methods to achieve collective impact in a complex public health challenge. The model drew upon the wealth of institutional and on-the-ground experiences of key state and regional partners, including health and social services providers, and women and families themselves.

### Common Aim and Strategic Objectives

A common aim provided a shared framework to ensure efforts remained coordinated and focused on a common goal. State-specific efforts of all state teams (see state specific technical briefs[1]) varied depending on the priorities of each individual state, but all worked in tandem to identify innovative solutions with potential to make an impact on the common aim of increased rates of first trimester prenatal care. In support of the common aim, the Border States CoIIN had the following strategic objectives:

- Develop and maintain a strong interstate CoIIN committed to achieving measurable improvements against our common aim through a culture of collaborative learning, innovation and quality improvement.

- Accelerate the development and/or discovery of improvement strategies and new evidence to increase utilization of early and ongoing prenatal care in local impact sites.

- Support dissemination, spread, and scale of successful improvement strategies to stakeholders in all states.

**The Border States CoIIN** (Collaborative Improvement & Innovation Network), led by PCI, worked with cross-sectoral teams across four U.S. states between 2017 and 2020 to achieve a common aim: to increase early prenatal care utilization by 10% among women in targeted impact areas of California, Arizona, New Mexico and Texas through the development of place-based improvement strategies that address the social determinants of health.
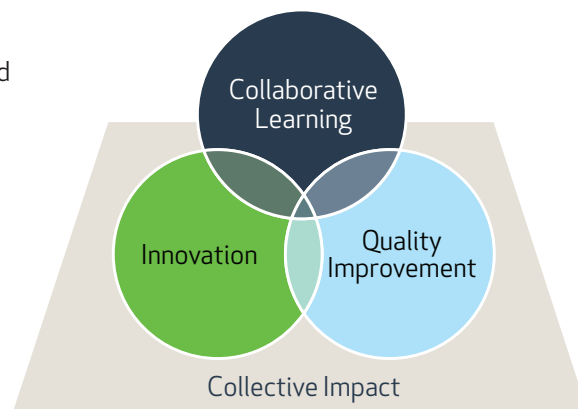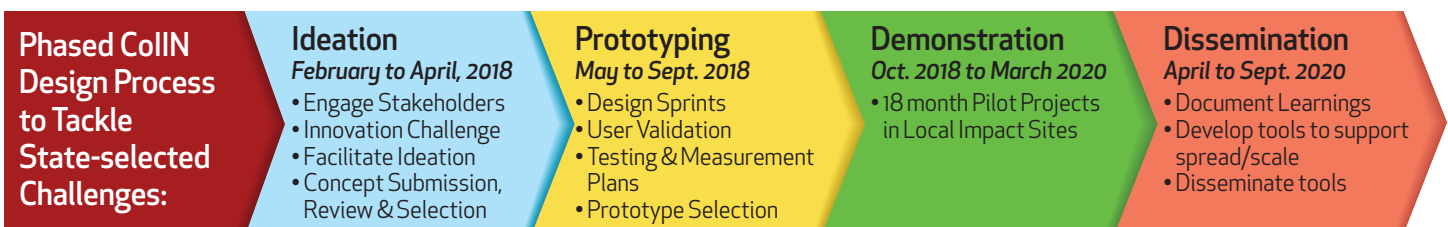
## Partnerships and Stakeholders

An interstate network of state team leads, the backbone organization (PCI) and expert consultants remained constant throughout the project, while stakeholders in target counties and demonstration projects evolved as prototypes for place-based improvement strategies were developed and refined. In each state, a cross-sectoral team of community-based organizations (federally qualified health centers [FQHCs], Healthy Start programs, and others) and government representatives (State Title V health officials) provided leadership on state activities in select target counties, defined the parameters for state-specific innovation challenges, engaged relevant stakeholders and coordinated design of prototypes and demonstration projects. A wide range of stakeholders engaged throughout the process to enrich the teams' understanding of selected issues, to participate in human centered design activities as well as to validate, test and promote solutions. These included technical subject matter experts, potential end users/program participants, clinical staff, clinic patients, youth, advocacy groups, community-based organizations, and public health advocates.

## Methods
### Core CollN Method: *Human Centered Design (HCD)*

HCD is a type of innovation process that places the needs and desires of people at the center of finding solutions for challenges they experience, to identify and design a new solution matched to specific needs. Ideally, the very people who experience a problem the most are a constant part of the design process to maximize success of solutions that are ultimately pursued. Achieving results through HCD requires providing enough structure to facilitate progress but not so much structure that it stifles creativity and responsiveness to changing stakeholder needs or new information. PCI adapted and customized a suite of HCD tools to guide state teams in their efforts to understand barriers/challenges to early prenatal care utilization and to identify potential solutions. PCI kept all teams operating along the same phases together yet allowed flexibility within each phase for each team to develop their own proposed solution.

It was important to regularly work with teams over time to increase their confidence in understanding the problem and holding the space to develop innovative ideas. During the first year, PCI helped states develop a more open, comfortable, and achievable view of innovation. Most teams spent much more time than anticipated in ideation (understanding the problem and generating initial ideas to test). Once they had a validated idea, they were able to move a lot faster aligning resources and partners to build and test.

| Phased CollN Design Process to Tackle State-selected Challenges: | Ideation *February to April, 2018* | Prototyping *May to Sept. 2018* | Demonstration *Oct. 2018 to March 2020* | Dissemination *April to Sept. 2020* |
|---|---|---|---|---|
| | • Engage Stakeholders<br>• Innovation Challenge<br>• Facilitate Ideation<br>• Concept Submission, Review & Selection | • Design Sprints<br>• User Validation<br>• Testing & Measurement Plans<br>• Prototype Selection | • 18 month Pilot Projects in Local Impact Sites | • Document Learnings<br>• Develop tools to support spread/scale<br>• Disseminate tools |

### Core CollN Method: *Quality Improvement (QI)*

QI is a validated set of methods used across many fields to measure whether a program, process or product is actually achieving what it is intended to do, and to help decision makers make adjustments or improvements. QI can make items that are difficult to measure more measurable by breaking them down into smaller benchmarks to use information and gauge success over a shorter time scale.

In the CollN, QI tools provided an ideal set of resources to help teams anticipate and test whether their innovative ideas would have the desired impact among end users, before investing in large scale implementation. PCI coached state teams through the use of several QI tools to structure measurement plans that could help define success measures, support testing of their prototype, help them to analyze what they learned from their tests, and then identify opportunities to adjust their prototypes to be more responsive. Focus was placed on more sensitive local indicators /metrics that would lead to bigger change.
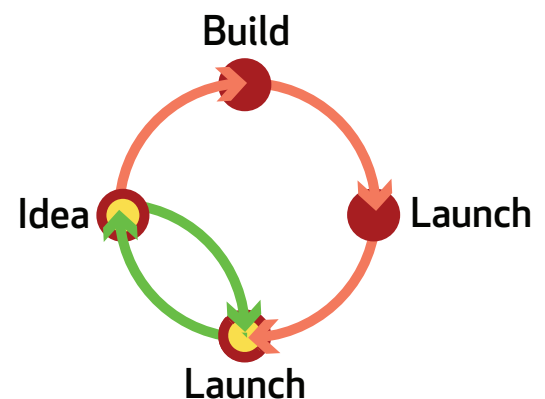
## Core CoIIN Method: *Collaborative Learning*

Collaborative learning, an educational method by which groups enhance learning through working together, was the glue that held the CoIIN initiative together. The CoIIN began with creating the space for teams to share and learn from each other about the challenges related to the CoIIN's common aim. Through monthly interstate team calls, state teams had the opportunity to seek and give feedback to one another on progress, learn how other teams were applying innovation and QI tools, share challenges, and create a support system that went beyond just CoIIN-specific learning. By holding the space for open sharing across all aspects of the team, PCI helped create a sense of deep trust that ultimately increased ownership over results and openness to feedback. Valuing the entire experience and diverse perspectives of our team members as they learned through this process – just as we regard the experiences of individuals we learn from through human centered design – was a central approach in our collaborative learning.

## Methods in Practice: State Team Innovation Processes

State teams learned from one another about challenges and opportunities related to the social determinants of health (SDOH) and barriers to early prenatal care in the border region. With backbone support, facilitation and coaching from PCI, they also learned how to use a core set of innovation and human centered design tools to unpack and understand the issue from the perspective of end users. Through these exercises, the team unlocked new thinking around all aspects of barriers to early prenatal care and narrowed these down to a series of 13 innovation 'challenge' questions. Each team selected up to two innovation challenge questions challenge questions to address in their state.

Each state team was given flexibility to select target area(s) and populations, as well as to define specific issues related to the interstate common aim and innovation challenge questions that best aligned with their needs and state priorities. State team leads facilitated ideation workshops with stakeholders in selected target areas to further narrow in around the problems they wanted to solve and promoted participation through submission of innovation ideas. All state teams selected as their target areas counties adjacent to the international boundary with Mexico.

Each state team developed a prototype for a unique solution (described in Figure 1 below), and refined it through iterative and mutually reinforcing processes of human centered design, quality improvement and collaborative learning. All teams used a common set of innovation criteria to select and refine their prototype ideas: (1) Potential for impact (i.e., potential to achieve our common aim); (2) Feasibility (to prototype and implement within demonstration project period and budget); (3) Measurability (i.e., ability to measure results); and (4) Potential for scale to other communities/contexts. See state-specific technical briefs[1] for further details on each prototype and state team process.

*PCI provided ongoing backbone support to capacity building and collaborative learning through several activities:*

- All-team in-person 'vision sprint' launch and endline celebration convening (celebration held virtually due to COVID-19)

- Monthly meetings with each state team to provide targeted technical assistance and coaching

- Bimonthly interstate CoIIN collaborative learning calls to share updates and learnings across the four states

- On-the-ground site visits to each state team and demonstration site for team-specific coaching, direction setting and planning

- Quarterly national stake-holder calls for all CoIIN teams to share resources

- Access to several toolkits and tools to support deeper learning across methods based on assessed learning needs
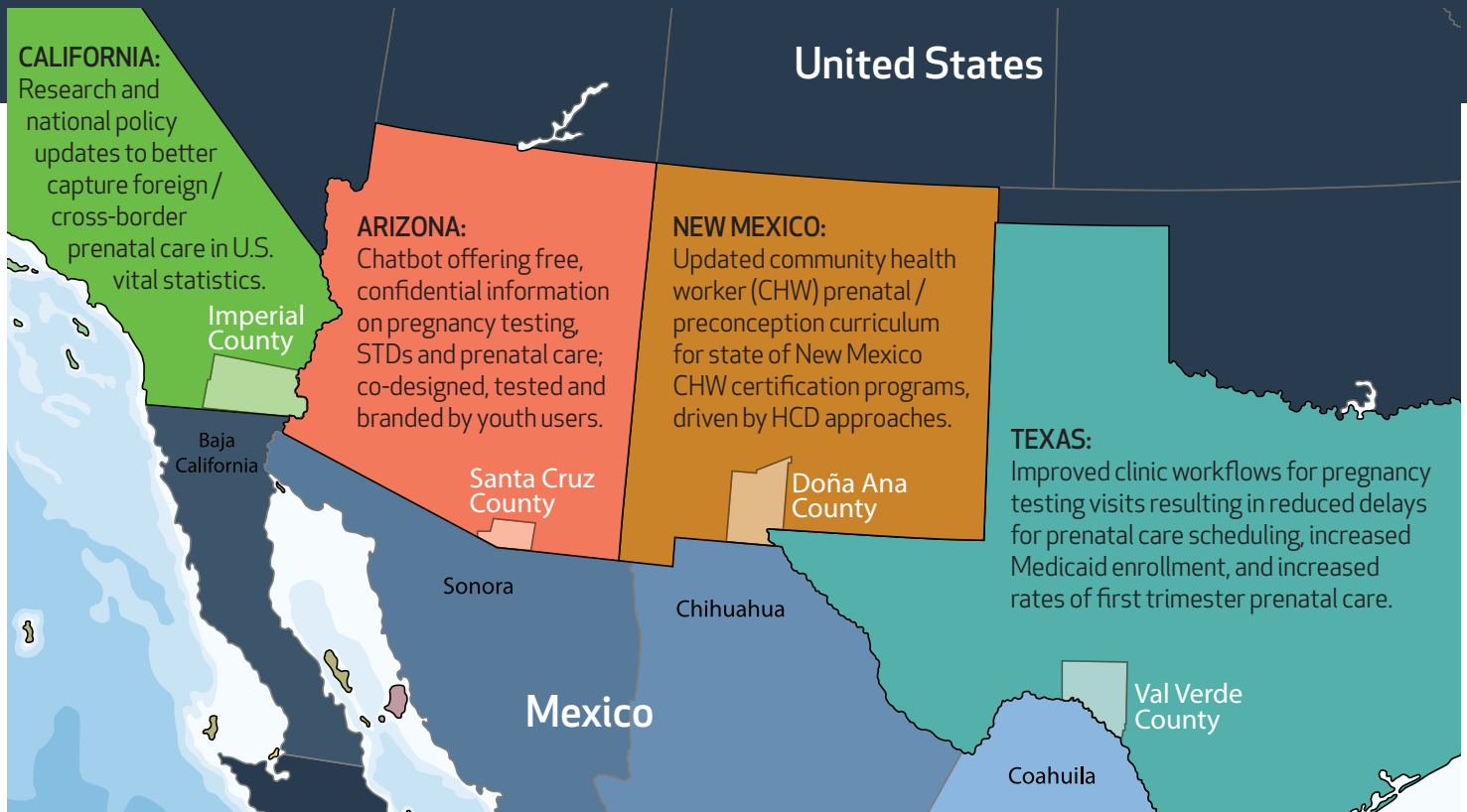
CALIFORNIA:
Research and national policy updates to better capture foreign / cross-border prenatal care in U.S. vital statistics.

Imperial County

Baja California

ARIZONA:
Chatbot offering free, confidential information on pregnancy testing, STDs and prenatal care; co-designed, tested and branded by youth users.

Santa Cruz County

Sonora

United States

NEW MEXICO:
Updated community health worker (CHW) prenatal / preconception curriculum for state of New Mexico CHW certification programs, driven by HCD approaches.

Doña Ana County

Chihuahua

Mexico

TEXAS:
Improved clinic workflows for pregnancy testing visits resulting in reduced delays for prenatal care scheduling, increased Medicaid enrollment, and increased rates of first trimester prenatal care.

Val Verde County

Coahuila

*Figure 1. Selected Target Counties and State Team Innovation Solutions (Prototypes)*

## Measuring Success

The Border States CoIIN adopted a four-level monitoring and evaluation framework (see Figure 2). A comprehensive measurement framework allowed the CoIIN to monitor process and outcome measures for each state and locality as well as for the overall collaborative activities.

Each state team reported on national HRSA CoIIN-wide measures related to infant mortality for their respective state (Level 1 in the Figure 2 table below). At the state and county level, all state teams monitored the results of their solution on our common aim (first trimester prenatal care) through partnerships with state health departments (Level 2). At the demonstration site level, each site had the flexibility to select the best measures for capturing the impact of their innovation (e.g., average scheduling delay for prenatal visits; number of app users, percent of CHWs trained; see Level 3). Tracking population level trends helped to contextualize more sensitive monitoring at the demonstration site level.

| Level | Measure | Source (Frequency) |
|---|---|---|
| HRSA CoIIN-wide Measures (Level 1) | Infant Mortality; Preterm Birth Rate | State provisional vital records (Annual) |
| Border States CoIIN Outcome Measures (Level 2) | First Trimester Prenatal Care | State/County provisional vital records (Quarterly) |
| Intervention Level Measures (Level 3) | State/site- specific per prototypes | Demonstration site data (Monthly/Quarterly) |
| Collaboration Measures (Level 4) | Adequate Backbone Support; Effective Collaborative Learning; Support for Innovation/HCD; Data-Driven Quality Improvement (QI) | PCI Survey by External Evaluator (Annually) |

*Figure 2. Border States CoIIN Measurement Framework*

## Collaboration Measures (Level 4)

To monitor the effectiveness of the CoIIN model itself and the collaborative activities in each state, PCI as backbone created a set of collaboration measures (Level 4). Collaboration measures allowed PCI to monitor perceptions of State- and Interstate-CoIIN members on their own evolving organizational capacity, practices, and achievements in key CoIIN competency areas, with a focus on assessing four areas in particular: perceptions of Adequate Backbone Support, Effective Collaborative Learning, Support for Innovation/HCD, and data driven Quality Improvement (QI). PCI used an external evaluator to establish baseline values of knowledge and level of comfort with key CoIIN competency areas (baseline), determined areas where increased training/resources were needed (mid-line), and assessed the achievements in each area at the end of the project (endline final evaluation).

## Results

Results from the endline evaluation showed that despite major COVID-related project disruptions in 2020, CoIIN teams were able to achieve strengthened capacity in key areas (Level 4) at the same time as they worked to document improvements in outcomes resulting from their demonstration activities (Levels 1 to 3). Participants noted that participating in the CoIIN and PCI's support helped to increase their capacity to develop and test innovative approaches and to employ QI methods such as small tests of change.

The top themes arising across the four main collaboration measures domains in the final evaluation were increased confidence in examining data, new-found skills in innovation testing and measurement, and developing data-driven processes. Several respondents also mentioned their excitement in engaging end users and using local approaches. Most also expressed appreciation for effective guidance and communication, new partnerships, and strong support from PCI (see Figure 3).

| Capacity Area | Successes | Challenges |
|---|---|---|
| Adequate Backbone Support | • Strong support and guidance from PCI<br>• Opportunity to examine data and follow through with action on project | • Maintaining momentum<br>• Insufficient timeline and resources allotted for implementing project |
| Effective Collaborative Learning | • Asking for guidance from counterparts in/out of state and within CoIIN<br>• Effective communication within the CoIIN<br>• Diverse set of voices contributing to the project<br>• New partnerships and collaborations | • None noted |
| Support for Innovation / HCD | • Ability to find alternative resources<br>• Engaging final users / using local approaches<br>• Cooperation of team members<br>• Developing processes<br>• Greater confidence in abilities | • Getting buy-in<br>• Limitations on implementation (funding, capacity) |
| Data-driven Quality Improvement | • Data-driven processes<br>• Learning how to use data/assess progress | • Challenges accessing data<br>• Insufficient human resources to interpret/synthesize data |

*Figure 3. Top Themes in Successes and Challenges related to Four Collaboration Measures Domains*

Note: Collaboration Measures (Level 4) are the focus of this technical brief; see state-specific technical briefs for achievements in Level 1 to 3.[1]

# Spotlights on Domain-specific Successes

Through an external endline assessment of the project's collaboration measures[2], and state team reflection interviews conducted
by external partners, PCI was able to gather useful insights into successes, challenges and perceptions of participating state team members (summarized below). All quotes below are from state team members who participated in either process.

## Adequate Backbone Support

Respondents acknowledged the importance of the strong support and guidance they received from PCI, and they appreciated how PCI supported teams to examine data to inform the actions they prioritized in their respective states. The main challenges in this domain included insufficient time and resources to accomplish the stated objectives of the project – though several respondents mentioned being able to locate alternative resources as a result – as well as insufficient human resources to interpret and synthesize data. Maintaining momentum in the face of external and internal challenges to project progress and getting buy-in from key partners were also highlighted by several respondents. Overall, teams were proud of team perseverance in the face of challenges and work that was not always easy, and all teams were proud of producing a product/ service that was useful, needed, and empowering to target beneficiaries.

## Effective Collaborative Learning

Through the collaborative learning process, state teams developed a resource network that went beyond just the scope of the project. This space allowed states to share their knowledge and expertise while trouble-shooting issues with one another. Through this network, state teams forged stronger connections at State and Inter-State levels. Demonstration partners and state leads reported feeling closer with Title V counterparts across states. All state teams expressed an increased ability and comfort in connecting and collaborating with state and local counterparts.

## Support for Innovation/HCD

Of the four identified domains (Backbone Support, Collaborative Learning, Innovation/ Human Centered Design (HCD), and Quality Improvement), the Innovation/HCD domain was the area in which participants felt they had achieved the highest level of comfort and confidence – including a good understanding of the meaning of innovation and ability to assess innovative ideas. Interviews with state teams revealed that all teams found it useful to talk to individuals with lived experience, ground insights with actual end users, and keep engaging the end user throughout the design and implementation process; and that almost all state team members plan to use the skills and tools introduced in this project to better incorporate continuous feedback and participatory design in their future work.

Moreover, through incorporating HCD into innovation designs, multiple state teams felt they were able to reinvigorate and expand the conversation around prenatal care and empower new groups of women to talk about it. For example, participants noted that the greater involvement of end users helped them to ask the right questions, expand thinking about prenatal care to before and between pregnancies, consider the unique barriers to specific groups being able to talk about and access prenatal care, and introduce reproductive justice into the conversation around prenatal care and trainings for health care workers.

"I am proud that we stuck with it; it was not always what we planned and required pivots to succeed. Our team managed to come up with a very successful outcome despite encountering many different challenges at several different points."

"This has been one of the greatest strengths of this CoIIN. The working relationship developed [among partners] … is one that will outlast the funding."

"[Our biggest accomplishment was] engaging our end users through the process and making sure we are designing solutions to that work in the real world, not how we thought it should work out."

*Quality Improvement (QI)*

Participants noted that they had learned new ways of thinking about data as a result of the CoIIN, in particular the importance of using QI data to "steer" the process such as understanding what worked and did not work and using the data to monitor progress. Most participants embraced continuous QI approaches and felt that there was improvement in their comfort level using small tests of change. When asked about their most significant accomplishments with regard to measurement/QI, several reported a sense of pride related to learning how to use the data, develop and utilize run charts, and assess progress.

"[Our biggest accomplishment was] figuring out a method for tracking our data in a sustainable way, understanding what the data says and then using it to inform our next steps. "

## Lessons Learned

Through the Border States CoIIN, PCI and its state level partners were able to use HCD/ innovation, QI, and collaborative learning to address and impact problems that have existed for decades. By taking these problems related to prenatal care and pioneering an innovative approach with the help of community members with lived experience, four unique, feasible, and implementable solutions were developed. While there remains room to further scale and explore these solutions, the initial success and promise of the Border States CoIIN highlights the value of using the complementary methods of HCD, QI, and collaborative learning together, and the importance of strengthening skills, confidence, and experience in using and applying these methods among public health professionals. The results and lessons learned indicate that there remains space to further develop this approach and explore its potential application in future projects in both similar and new areas. Below are several key lessons learned, to inform practitioners interested in replicating the CoIIN model for other initiatives:

1. **HCD, QI, and collaborative learning are complementary approaches that can be very powerful when used effectively together to address complex health challenges.** Effective QI methods can help teams to identify critical issues that can benefit from innovation strategies. Human centered design methods, when implemented effectively, can help to generate meaningful engagement and sustain momentum for improvement work. Collaborative learning fosters a supportive network through which teams can help one another overcome challenges in their projects.

2. **With the CoIIN model, it is critical to provide enough structure to ensure progress yet still allow ample freedom for each team to engage in creative, innovative ideas** – particularly when working on a tight timeframe. For organizations overseeing similar projects in the future, it may be helpful to replicate the following practices:

   • Establish a foundation of trust built from being available and vulnerable with state/local partners. This will help efforts going forward to be the most productive.

   • Engage in an intensive accompaniment of state/local teams. This means working alongside state/local teams to ensure and recognize their success.

   • Be willing to take the time for ideas to emerge and become comfortable working with some degree of ambiguity. Help state/local teams become comfortable with a process in which solutions may take time to emerge.

- Prepare in advance to assist state/local teams in applying tools to facilitate the ideation and design process.

- Co-lead innovation workshops at each state/local level but be careful not to take the lead. It is essential to preserve a state/local team's sense of control and leadership in order to ensure continued innovation and ownership of results.

- Be prepared to pivot throughout the project based on state/local teams' input and learning from communities.

3. **Ensure that teams are equipped from the outset with adequate staff and time to develop capacity in needed skill sets; invest early in capacity building.** It is important to recognize that innovation will challenge teams to explore new, unconventional ways of working. For example, developing creative measurement strategies can be difficult for teams accustomed to building reports around pre-defined, standardized indicators. Data support and coaching was critical for all teams in our experience.

4. **The CoIIN model works best when layered onto an existing partner network where shared vision and priorities already exist**. The Border States CoIIN was built upon a foundation of the Healthy Start Border Alliance, a regional cross-state network of five community based perinatal home visiting programs already working together towards reducing infant mortality in the region. Access to program participants also allowed teams to tap into community members more quickly, and leverage existing relationships of trust that supported the work through all of its phases.

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### References

1. Technical Briefs were developed highlighting the work of each state team. Technical Briefs can be found on the Resource Library of Global Communities' webpage at https://www.pciglobal.org/resource-library/program-highlights/

2. Border States CoIIN Endline Report on Collaboration Measures, November 30, 2020. Available upon request.