StartStrong™

A partnership for healthy babies and families

StartStrong Toolkit

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EXECUTIVE SUMMARY

In the spring of 2013, Bethesda Inc. brought together the team that became known as START STRONG to implement a transformative idea. The challenge: Identify transferrable strategies to deliver more comprehensive, timely care while a woman is pregnant and extending until the baby is six months old. The focus of this perinatal intervention called upon all components of what was less a system and more a collection of excellent but typically unconnected services. Four partners came together – Cincinnati Children's Hospital Medical Center, the Faculty Medical Center at Good Samaritan Hospital, the Center for Women's Health at the University of Cincinnati Medical Center, and the Every Child Succeeds home visiting program – to set upon a bold new path.

Through this project, a total of 520 women received critical elements of our StartStrong bundle. This bundle was a place-based, collaborative relationship among nurse case managers, home visitors, community health workers, physicians and hospital leadership. Our results in our two targeted neighborhoods of Avondale and Price Hill:

- **A reduction in extreme preterm birth.** While Avondale's 37-week preterm birth rate did not change, the extreme preterm birth rate decreased from 1.79% to 0% (p=0.009). No infants have been born in Avondale at less than 28 weeks since the 4th quarter of 2014 (as of 2/1/18).
- **A reduction in non-urgent emergency department usage.** The non-urgent emergency department utilization rate dropped from a baseline of 7.0 visits per 100 infants per month to 4.5 per 100 infants per month in the targeted neighborhood of Avondale.
- **Significant cost savings.** The projected net cost reduction over four years totaled $1.341 million, annualized savings of $335,250 for care for preterm newborns in the Neonatal Intensive Care Unit.
- M**ore mothers entered into prenatal care early in pregnancy.** The percentage of Avondale women receiving prenatal care by 12 weeks gestation increased from 50.2% at baseline to 60.5% during the project. Timely prenatal care also increased in Price Hill from 45.9 to 54.7%.
- **More newborns were seen by a pediatric provider within the first nine days of life.** The percentage of Avondale infants completing their first pediatric visit at PPC within the first nine days of life increased from 69% at baseline to 92% over the course of the project.
- **Families connecting earlier and more quickly to community health workers and home visitors.** Referrals to community health workers and home visitors were made earlier in care by obstetric providers, enabling an earlier connection to families.

This challenge called for transformative thinking, cooperative learning, and careful execution. Nearly three years later, there are outstanding outcomes to report, a testament to the value of diverse, trusted partners and Bethesda Inc., which supported – indeed encouraged – innovative thinking.

The stated goals were to reduce preterm birth and the unnecessary use of the CCHMC emergency department in two targeted urban neighborhoods: Avondale and Price Hill. To accomplish this, the group committed to changing the way pregnant women and infants in these high-risk neighborhoods access and use health and wellness care, forming better linkages between clinicians and community services like home visitors and community health workers, concentrating more intentionally on the social influences of health and helping moms become better healthcare consumers.

To achieve these goals, StartStrong tested a range of new approaches. Not everything has worked, but the project has benefitted from related learnings, and each approach has included direct family engagement – asking for their opinions, considering their recommendations, and understanding their needs. Through community engagement strategies and leveraging existing community relationships, significant progress was made:

- New parent groups and a pantry with baby supplies sponsored by an Avondale church were launched
- Community feasts for healthcare providers and families were held
- Ethnographers were engaged to identify strategies to work best with families (including those less obvious)
- Instructional videos for newborn care were developed and shared with families
- Help from other community groups serving families but not necessarily focused on pregnancy and newborn care was enlisted
- Early engagement in pregnancy care was made a community priority, with churches delivering the messages to the community
- Access to home visitors and community health workers was increased; physicians spent more time in the community
- Prenatal appointments were accelerated to ensure early care
- Care teams of obstetric providers, community health workers, and home visitors were created
- Place-based teams were created to help clinical providers better understand the communities they serve

One of the most notable success stories from our StartStrong work is the dramatic change within the Faculty Medical Center at Good Samaritan Hospital. Together, administration, clinical staff, community health workers, and home visitors put the family at the center of decision-making and designed a system that responded to family needs rather than those of the institutions. As part of StartStrong, the Faculty Medical Center transformed the care it provides to mothers in the identified neighborhoods of Avondale and Price Hill. Pregnant women who live in those neighborhoods are enrolled in a special nurse case manager program. This shift connects women to consistent support during obstetric care as well as resources to help them have a healthy pregnancy and birth.

In addition, the University of Cincinnati Center for Women's Health developed a neighborhood-focused obstetric team, with preliminary assessment suggesting good results.

Required, of course, was a new way of thinking and a new way of providing service. All of this had elements of risk because no one knew whether the new "system" would work and how both patients and staff would respond. StartStrong was charged with ensuring that outcomes for families improved and that clinical operations could accommodate the changes while moving from a more traditional way of working to something new – the proverbial building the plane while flying it.

What emerged from StartStrong was something altogether remarkable – an improved system, better outcomes, enhanced family satisfaction and strong institutional support.

The healthcare institutions involved are to be commended for their willingness to be flexible, allowing the partners to change the way appointments are made, staff is assigned, and operational hours for clinics and medical offices are available. These were not trivial requests, so it is important to note that Good Samaritan Hospital, Cincinnati Children's Hospital Medical Center, and the University of Cincinnati Medical Center were willing to let StartStrong try new things with no assurance of success. They allowed StartStrong to have credibility before it was earned, credibility that is now supported by our outcomes.

This shared collaborative way of thinking also informed the formation of community teams from the hospitals, prenatal care clinics, and community programs. These teams met and continue to meet on a regular basis to share data, problems, and issues, and to come to conclusions that can be adopted in a variety of settings. Continuous improvement methodology was used to find the best solutions. Case conferencing was used to ensure comprehensive, coordinated care for families among healthcare providers and community services. The organizations got to know one another better and, although many had been occupying the same space for many years, found new and improved ways to work together. Those strategies for cooperation are the foundation for ongoing engagement, and a commitment to improving care for families, and cooperating with one another.

Working with Cradle Cincinnati, a relatively new organization focused on ending infant mortality in Hamilton County, the Learning Collaborative strategy originally envisioned in the Bethesda proposal was greatly expanded to form an Infant Mortality Learning Collaborative. Supported by an experienced quality improvement team at CCHMC, the Collaborative had 28 teams from different practices and organizations working to solve this problem. Those organizations reach approximately 85% of the pregnant women receiving Medicaid in Hamilton County. Each team worked to transform the way prenatal care is provided, building upon the learnings from StartStrong by focusing on one or more things that contribute to infant mortality reduction (examples include smoking cessation, safe sleep, warm handoffs to home visitors and health workers), and incorporated continuous improvement tests of change. Data are collected centrally and have thus far demonstrated some success in improving referrals from obstetric providers to community health workers and home visitors, and engaging more practices to emphasize smoking cessation with their pregnant patients.

WELCOME LETTER FROM LEADERSHIP

Prematurity (birth before 37 weeks gestation) is the single costliest problem facing pediatric healthcare. Nationally, the estimated annual direct economic cost of preterm birth is at least $26.2 billion. Care for preterm infants accounts for one-quarter of total hospital spending on children. Expenses related to preterm birth do not end after discharge from the NICU. Preterm babies often face life-long medical and developmental challenges that become major expenses for the families and their communities. Very preterm and extreme preterm births (births before 32 and 28 weeks gestation, respectively) are the leading cause of infant death. *Simply put, the potential economic, psychological and social savings from delaying preterm birth by just a few weeks are enormous. Therefore, efforts to reduce preterm birth can improve the health of families and reduce costs.*

As anticipated, bringing together a nationally recognized home visiting program, Every Child Succeeds; two of the region's largest birth hospitals, the Faculty Medical Center at Good Samaritan Hospital and the Center for Women's Health at the University of Cincinnati Medical Center; and the number three children's hospital in the country, Cincinnati Children's Hospital Medical Center, was not without

challenges. Three hospitals? A community organization? Two communities? Multiple stakeholders and special interest groups? What made it work was joining in good faith with a common goal and a sincere interest in determining how we could best improve the system of care for pregnant women and infants. We chose to work in two communities, Avondale and Price Hill, each with different characteristics, so that our outcomes could be more easily validated and so that we could test our way into new learnings. A challenging task but a worthy one!

What did we accomplish, and what did we learn?

What we accomplished:

- While we did not detect a shift in the overall *preterm birth rate* for Avondale or Price Hill, we made important progress against other indicators.
- The rate of *extreme preterm births* in Avondale (births before 28 weeks gestation) decreased from 1.79% to 0% (p=0.009). There have been no infants born in Avondale before 28 weeks gestation in nearly three years.
- Babies born later are generally *healthier and are less costly*. We analyzed costs using the number of births at each gestational age and the average cost for maternal and infant healthcare at each gestational age. The *net cost reduction* over the course of StartStrong was calculated to be $1.341 million, an annualized savings of $335,250 for Avondale alone.
- More women are reporting *entry to prenatal care* in their first trimester. The percentage of Avondale women receiving prenatal care by 12 weeks' gestation increased from 50.2% at baseline to 60.5% during the project. Timely prenatal care also increased in Price Hill from 45.9% to 54.7%.
- During the grant period, the *non-urgent ED utilization rate dropped* from 7 visits per 100 infants per month to 4.5, a reduction greater than our goal of a 30% reduction. This rate was maintained for eight consecutive months.

What we learned:

- *Leadership matters*. Leadership at all levels is important, with a clear focus and alignment to achieve goals and a financial argument for pursuing this important work.
- It is important to choose *metrics* that break down silos and support positive outcomes for families.
- Data collection can drive shared *improvement*, and a population focus drives *results*.
- Comprehensive learning is essential, driven by *continuous quality improvement*.
- Care should be *mother/family-driven*.
- A *commitment to change* and a willingness to do more for families are required.
- It is important to consistently implement *a system of improvement efforts* and to offer services, respond to community needs and provide feedback. Each community has unique challenges that need to be understood and strategically addressed when engaging in this transformation work.
- *Incentives are not currently aligned* for community-wide outcomes, collaboration and transparency.
- *Shortages of necessary services*, like home visiting and community health worker programs, can impede progress.

- There is a need to more clearly *define the roles* of the home visitor and community health worker; additional capacity for both of these services could positively impact the system.
- The Spread of successful strategies is slow.
- More strategies are needed to engage the *hard-to-reach mother* early in her pregnancy.

With courage and dedication, this model can be adopted in other settings, hospitals, and clinics. The real genius is that it brings together the various parts of a complex system with ONE shared goal – to provide the patient with the best possible experience while being mindful of controlling costs and validating outcomes.

GETTING STARTED

CONVENING THE PARTNERSHIP

Convening the partnership involved identifying and bringing together – in a way that would inspire trust – key stakeholders in the perinatal space.

KEY STAKEHOLDERS

Identifying potential partners began by identifying key providers in the perinatal period, such as prenatal care through pediatric care. This meant understanding who might be serving women in the two identified neighborhoods, and who has also demonstrated a commitment to quality and improvement. Most importantly, this also meant understanding that the women themselves were key stakeholders. Through better understanding, of the experiences and needs of women and children, we developed and tested new solutions based on their wisdom.

Partners understood that the StartStrong project offered an extraordinary opportunity to develop a new system of care, and to promote health versus treating poor outcomes. Partners included a nationally recognized home visiting program, two of the region's largest obstetric providers, the number three children's hospital in the country, and two community health worker agencies.

Using CCHMC Emergency Department discharge records for infants, we located the key pediatric practices serving infants in Avondale. Similarly, key prenatal care providers were identified for each of the two communities. Using vital statistics records, we learned that over 85% of the births in the two neighborhoods were at two maternity hospitals.

DEFINING THE QUESTION

The team, including both clinical and community stakeholders, was convened with the understanding that there was an opportunity to transform the healthcare system for pregnant women and newborns, especially for those at the highest risk. Elements of the core bundle focused on a continuum of care, family support, and attention to the needs of women and infants.

The team agreed that infant mortality could best be impacted by addressing the problem of preterm birth, the largest contributor to infant mortality.

Understanding that a trusted connection with a primary care provider may influence a lifetime of health, the team emphasized making warm handoffs between clinical and community care providers during the perinatal period. This effort was intended to decrease emergency department usage, as a trusted early relationship with a pediatric primary care provider could motivate families to seek care with their provider instead of the ED.

Therefore, the purpose of StartStrong can be captured by answering a difficult question:
How might we impact the systems of perinatal care, both clinically and in the community, to ensure families have a healthy birth and begin a lifetime of health by being connected to and seeking care in appropriate care settings?

Objectives and Intended Impact

Prematurity (birth before 37 weeks gestation) is the single most expensive pediatric healthcare problem. Care for preterm infants accounts for one-quarter of total hospital spending on children. Expenses related to preterm birth do not end after discharge from the NICU. Preterm babies often face life-long medical and developmental challenges that become major expenses for the families and their communities. *Simply put, the potential cost savings for delaying preterm birth by just a few weeks is enormous. Therefore, efforts to reduce preterm birth can improve the health of families and reduce costs.*

The partnership described this work sought to develop a scalable, transferrable model to improve maternal and infant health outcomes and to achieve the Triple Aim of better health (reduced preterm births), better care (increased care quality, reduced ER usage), and lower costs (averted NICU and ER costs). To achieve these aims, the partnership committed to:

1) Creating a reliable, highly integrated community system of care tailored to meet maternal and infant need
2) Engaging patients, families, and neighborhoods using person-centered redesign processes, innovative technology, and community organizing.

Measuring Progress and Success

In the United States, preterm births account for 35% of infant deaths. Financially, it costs the U.S. healthcare system $26 Billion annually. In 2013, Ohio had more preterm births than any other state. Hamilton County - which is home to some of the best medical resources in the country, including CCHMC - ranked higher than any other county.

The magnitude of this community partnership cannot be understated as to its measurable impact on maternal and infant health in Avondale and Price Hill. Of the 5,200 pregnant women covered by Medicaid in Hamilton County, roughly 10% live in these two communities. The goals of the project were to improve the system of care for roughly 530 pregnant women and their children, resulting in 1) a 10% reduction in the preterm birth rate (from 14.2% to 12.8% or from 75 to 68 premature infants), 2) a 30% reduction in the rate of inappropriate ER utilization among these infants in the first six months of life (from 270 to 190), and 3) a reduction in aggregate NICU and ER costs by an estimated $500,000-$750,000 annually.

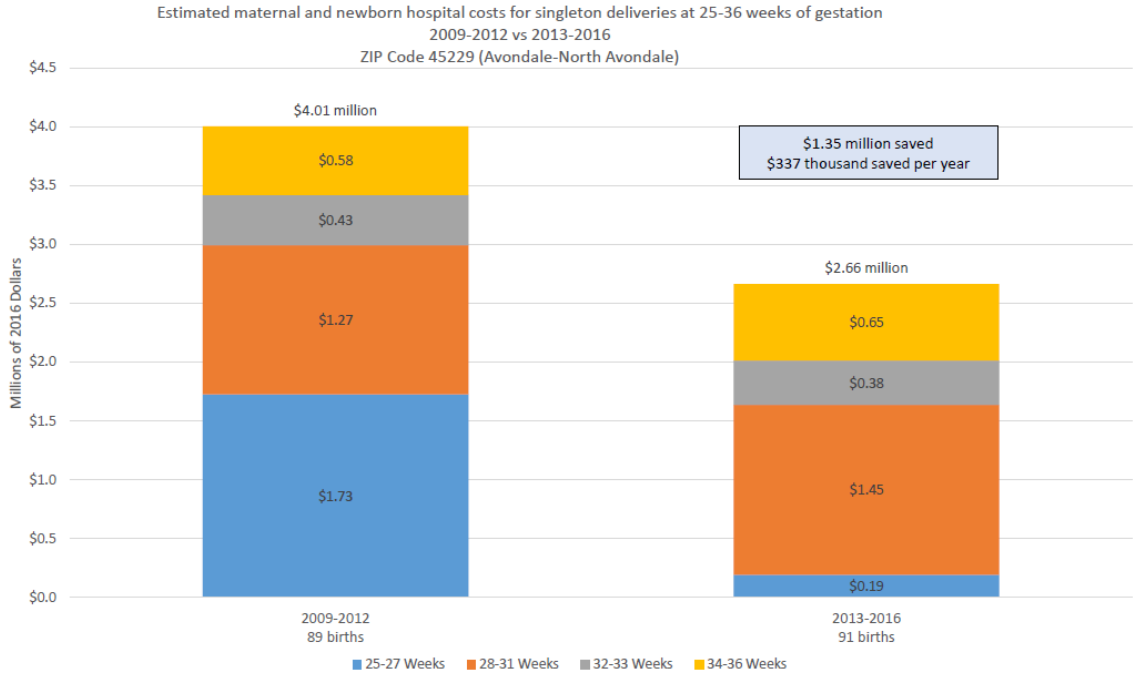
Data were collected based on the primary zip code(s) for each neighborhood to allow for consistent data tracking across all data systems and providers. Avondale was tracked using 45229 and East/Lower Price

Hill 45204 and 45205. Measures agreed upon, tracked and regularly reviewed throughout the project included:

1) ***The preterm birth rate*** was measured using Ohio Department of Health vital statistics records with each birth linked to the mother's neighborhood at birth. Neighborhood births less than 37 weeks gestation as a percent of total births were plotted monthly.
2) ***Emergency room utilization*** was measured using CCHMC's ER discharge claims linked to the patient's neighborhood at the time of service. Diagnoses were grouped to identify non-urgent visits.
3) ***Care*** measures included both prenatal care and newborn well-child care;
    a. Neighborhood rates of timely prenatal care were tracked using vital statistics records, defined as the percentage of women entering prenatal care in the first 12 weeks (trimester) of pregnancy.
    b. Newborn well-child care was monitored monthly to understand how many newborns attended the first newborn visit within nine days of life at the CCHMC Primary Care Center, the largest pediatric provider in Avondale. While holding that visit within seven days of life is preferable, two additional days were added to this measure with the understanding of the many barriers families often face to getting to appointments.
4) Quality improvement measures tracked care processes monthly, such as days from referral to first face-to-face visit with a home visitor or community health worker.
5) ***NICU costs*** related to birth outcomes were measured by focusing on gestational age at birth and its impact on the cost of care for both mom and baby.
    a. To analyze the reduction in aggregate costs, we examined two components: the number of births at each gestational age and the average cost for maternal and infant healthcare at the gestational age. We used vital statistics data for Avondale to obtain the number of births at each gestational age. We then used published data on the average healthcare costs at each gestational age. We then applied that cost data to the distribution of preterm births.
    b. The analysis covered eight calendar years from 2009 through 2016. Given high year-to-year variation, total costs were aggregated for two 4-year periods (2009-2012, 2013-2016), corresponding to before and after the StartStrong launch.
    c. We restricted data analysis to Avondale deliveries since no changes in preterm birth were detected in Price Hill data. Due to the minimal cost reduction associated with ED utilization (relative to the high cost of an extreme preterm birth), this variable was not included in the analysis.
    d. Costs for the baseline period (2009-2012) totaled $4.005 million compared to those during the four years of StartStrong (2013-2016) of $2.664 million. The net cost difference over 4 years totaled $1.341 million, annualized savings of $335,250. While substantial, this did not achieve our desired savings goal. It important to note, however, that this reduction was for Avondale only since interventions were not fully spread to Price Hill.

Avondale Preterm Birth by Year (2009-2016)

	2009	2010	2011	2012	2013	2014	2015	2016
Total Births	219	172	208	189	217	202	198	191
Preterm (<37 weeks)	29	21	26	21	29	22	20	22
Percent	13.2%	12.2%	12.5%	11.1%	13.4%	10.9%	10.1%	11.5%
Extreme Preterm (<28 weeks)	4	4	6	2	2	1	0	0
Percent	1.8%	2.3%	2.9%	1.1%	0.9%	0.5%	0.0%	0.0%



Source:
Birth data from Hamilton County Public Health
Estimated costs data from Gilbert WM, Nesbitt TS, Danielsen B. The cost of prematurity: quantification by gestational age and birth weight. *Obstetrics and Gynecology* (2003) 102(3):488-92

UNDERSTANDING THE COMMUNITY

COMMUNITY IDENTIFICATION AND SCOPE OF CHALLENGE

StartStrong began by identifying two Cincinnati neighborhoods as focus areas, Avondale and East/Lower Price Hill. In these two neighborhoods, approximately 530 babies are born each year with an average of 75 born at less than 37 weeks gestation (14.2%). In 2011, in the three targeted zip codes (45229, 45204, 45205), there were 15 infant deaths. NICU stays for babies born preterm can easily cost $250,000 or more. Both neighborhoods also have strikingly high rates of child poverty – offering a 'double jeopardy' of medical and social risk.

Community-Centered Planning

The partnership officially began working together July 1, 2013. In September, the team engaged the Business Innovation Factory (BIF) to conduct in-depth ethnography in Avondale to: identify opportunities for patient- and community-driven improvements. BIF wanted to understand the human factors that contribute to the inexplicably high rates of preterm births, as well as the use of the Emergency Department for pediatric primary care.

Although the clinical causes of preterm births remain elusive, more is understood about other conditions that influence preterm births:

- Spacing of pregnancies matters. Pregnancies less than 18 months apart are a leading determinant of preterm births.
- Smoking and other risky health behaviors contribute to high blood pressure and hypertension and influence pregnancy outcomes.
- African American women are more likely to experience preterm births.
- Consistent prenatal care is essential.

BIF considered how this information factored into the pregnancies of women in Avondale. Through the stories and experiences of 16 amazing and generous women, obtained during in-depth interviews, a portrait of pregnancy emerged that helped us understand the preterm birth rates. Women shared that they believed:

- Preterm birth is not commonly understood - as a problem or a risk.
- Girls are increasingly having sex younger, without solid information about sex, contraception, and sexually transmitted infections.
- Myths about sex and contraception are propagated through very limited support networks.
- Young pregnant women, in denial, delay prenatal care.
- Pregnancy may postpone or sever educational and professional aspirations.

There are “tall walls” - built on distrust, apathy, and judgment – between healthcare institutions and women, preventing clinical care from translating into self-managed care. Women often feel powerless in their own lives and in their intimate relationships. When their children are sick, they feel terrified, or don’t have an established relationship with a physician, and use the Emergency Department because it is available and easily accessed.

Often, these challenged women have a hard time imagining a future - an education or a career - beyond motherhood. They lack good role models and haven’t developed the skills to craft their own novels and unique future narratives. Babies become their single and best purpose, the most valued and sacred relationship. This experience is then perpetuated with their daughters and granddaughters.

With insights and design principles in hand, BIF moved from the world of discovery into the world of possibilities. They mapped opportunity spaces where successful solutions could be found. For each opportunity space, BIF proposed different paths to help rigorously explore the territory. These opportunities are translated into the score of interventions tested in StartStrong (see the Community Engagement section of the Appendix).

Connecting with the Community

Trust is essential. Delivering on promises is vital. Connecting with the community depends on building relationships with trusted partners, such as community-based organizations, churches, and similar groups. Every Child Succeeds, in particular, had spent nearly a decade focused on community work in Avondale when StartStrong began. Moreover, the agency that delivers ECS services in Price Hill is deeply embedded and well-respected within the neighborhood. These relationships created new pathways for spreading messages and connecting with families.

REIMAGINING PRENATAL CARE: A NEW TEAM APPROACH

RN CASE MANAGER

The obstetric RN case manager became the central intervention for StartStrong, as a consistent, dedicated individual, embedded within prenatal clinical care can be a game changer for families. The RN case manager helped to ensure enhanced access to care (e.g., following up on missed appointments). The RN case manager guided the obstetric clinics' coordination with community health workers, ECS, and other agencies. They advocated for same-day access to care, rapid rescheduling of missed appointments, more frequent follow-up appointments, consent to share information across providers, and enhanced attention to transportation. Often, nurse case managers in the obstetric space are connected to more specific clinical risks, such as gestational diabetes. In the StartStrong model, neighborhood identification was recognized as being very important to the identification of risk. A deeper understanding of the neighborhoods was desired, coupled with a recognition of how systems and conditions in the two identified neighborhoods contributed to increased risk for families. Therefore, using neighborhoods was an essential criteria for matching a family with an RN case manager.

A commitment to patients and the willingness to go above and beyond was also required. Flexibility and persistence were consistently required of the RN case manager, far beyond what is traditionally expected of such a position.

HOME VISITOR

Home visitation is an evidence-based program of in-home parenting education and support delivered by professional home visitors. It seeks to strengthen the emotional bond between parent and child, build parental confidence, and enhance family self-sufficiency. Home visitors emphasize developmental milestones, safe and supportive home environments, maternal/child health and social support, encouraging parental engagement and promoting school readiness. An important role of a home visitor is also linking families to community resources, emphasizing the important role that communities play in helping parents raise healthy and successful children. They work with families prenatally or just after the child is born through the first three years of life, intending to bridge families into quality preschool.

In the perinatal space, home visiting is largely focused on first-time mothers, with the hope of impacting subsequent pregnancies and parenting future children. StartStrong offered the opportunity to develop a new, shorter curriculum focused solely on the perinatal period – prenatally through the first six months of life. This curriculum utilized Every Child Succeeds' existing prenatal curriculum, which covers topics such as healthy lifestyles, discomforts and danger signs in pregnancy, fetal development, labor and delivery, breastfeeding, newborn care and father involvement. Additional enhancements made to the curriculum delivered to non-first-time mothers included additional training on preterm birth; increased attention to mental health, domestic violence and substance abuse training; and counseling strategies to address smoking, alcohol and drug use and trauma. Home visitors for non-first-time mothers had

more limited caseloads (about 15 versus the standard maximum of 25) in order to deliver more frequent visits and intensive services. The ECS Care Team Consent was adopted for use with pregnant women to enable sharing of key information between home visitors, clinic staff, and obstetric providers. Case conferencing was developed and refined to perfect sharing of timely information among providers. Health literacy and ECS's maternal depression treatment program, Moving Beyond Depression, were incorporated into this new curriculum as well. Finally, home visitors provided help for day-to-day challenges such as transportation barriers and food insecurity.

As a result of these collaborative efforts:

- More than half of clients who enrolled in ECS did so early in pregnancy (55% enrolled by 18 weeks gestation).
- 63.8% of those who were referred to the service enrolled in ECS, better than the national average of around 50%.
- About 90% of births to women enrolled in ECS were full-term.

Community Health Worker

According to the American Public Health Association (APHA), "a community health worker also builds individual and community capacity by increasing health knowledge and self-sufficiency through a range of activities such as outreach, community education, informal counseling, social support and advocacy." Community health workers, as an extension of clinical care during pregnancy and those critical first six months of life, help women navigate the healthcare system. Community health workers following the Pregnancy Pathways model also enhanced the knowledge of community services available as part of the healthcare delivery system. Similar to what was learned with the RN case manager, a dedicated community health worker focused on a specific neighborhood and firmly embedded in the delivery of prenatal care was most successful. Families who face multiple barriers daily to achieving optimal health did best when partnered with such a community health worker whom they trusted.

Physician

Transformation of prenatal and pediatric care requires a strong provider champion that is given enough time to lead the team through frequent and regular reviews of critical data elements that drive the care team to analyze changes they are making to move towards patient-centered care to determine if these changes should be spread or abandoned. The provider champion must also create the environment that allows for deep connections to the women and their families to better understand the needs to address so Prenatal and Pediatric care is most effective. In addition, the provider champion can help outline critical information about the family to pass to the home visitation team and the other healthcare teams working with the family. Their guidance and decision-making is critical to the success of the teams delivering care in both the prenatal and pediatric setting.

Hospital Administration Support

Support from hospital administration is critical. This project could not have had any success without buy-in from those in hospital administration who can enable innovation, and collaborative learning across systems. It is uncommon for hospital systems to come together to learn from one another in this way, to share successes and failures, challenges and learnings transparently and in real time to improve patient care for women and babies. Moreover, coming together across the continuum of care from prenatal to pediatric care is also quite unusual. The support of hospital administration empowered the StartStrong

team to learn, challenge norms and standard procedures, and test new ways of delivering care. This work would have been impossible without the support of hospital administration.

BEYOND PRENATAL CARE: OTHER STRATEGIES FOR IMPROVEMENT

COMMUNITY ENGAGEMENT AND RELATIONSHIP BUILDING

FAMILY GROUPS

Family groups, an integral part of building trust within communities, can address social isolation by helping to build relationships among the participants, and provide education or a connection to resources. They encourage a connection to community resources through socialization, educational programs and building social networks. Meals and childcare are provided to encourage attendance.

Support groups, tailored to the needs of the community, adapted as needed, and held at a community location that is trusted by community members and conveniently located are key to creating cohesion and joint ownership. While mothers are a natural place to start, communities may develop or expand support groups for others in the community caring for or parenting children. These should be developed in response to community needs and desires, therefore, some communities may determine that support groups will not meet the needs of the community, and pursue other ways to support children and families. See the appendix for more information about family groups and a sample group flyer.

FEAST

Neighborhood Feasts were intended to be a place where women, moms, families, community leaders, and healthcare providers come together to plan and host a neighborhood feast for themselves and a number of their peers. The community breaks bread together, sharing their stories and building new connections. Benefits of holding a feast are increasing empathy and trust among neighborhood residents and resources, and building relationships and connections capable of collaboration. Specifically, goals of the feast were to:

- Build relationships or break down barriers between expectant mothers, families, community partners, and healthcare providers;
- Create a community of support for expectant mothers to share experiences and stay connected.
- Foster engaging conversation; and
- Educate expectant moms with accurate, relevant information around pregnancy and childbirth to reduce infant mortality in the Cincinnati region.

LEARNING COLLABORATIVE

Using quality improvement methods, we developed a network of parents, healthcare providers and community organizations connected through clear measures and a common learning system. This learning system was based on the Institute for Healthcare Improvement's Breakthrough Series Collaborative (more can be found on IHI's website here: http://www.ihi.org/resources/Pages/IHIWhitePapers/TheBreakthroughSeriesIHIsCollaborativeModelforAchievingBreakthroughImprovement.aspx). Prenatal and community care providers were brought together to focus on transformation of care There are currently 28 teams across Hamilton County who come together to learn collaboratively through the implementation of improvement science. Teams

have focused on three prototypes refined by StartStrong: early access to prenatal care, seamless connections between healthcare providers and community supports, and a weekly focus on mitigation of failures. Teams are also developing evidence for new prototypes related to smoking cessation, birth spacing, and safe sleep. The impact of the initial StartStrong work is being spread and will be continued through the Cradle Cincinnati Learning Collaborative.

Enhanced Pediatric Care

Ideal Newborn Visit and Newborn Education

Significant efforts were made to understand what an ideal newborn visit might look like, and to move toward improving care for new patients and their families. Efforts were made to ensure families had the opportunity to connect to all available resources at their first visit, and to ensure no time was wasted during the visit. Moreover, the most common conditions for which families sought care in the emergency room were identified and educational videos were created to coach families on how to care for conditions at home, and when to seek care from a medical professional. These videos were shown to families at well visits as anticipatory guidance to help families feel empowered to care for their newborn, and to seek care in the appropriate setting. This work has laid the foundation for future work at the CCHMC Pediatric Primary Care centers to focus on the first two months of life as a critical time for building trust, establishing a medical home as a foundation for future health and success.

Enhanced Accessibility

During the course of StartStrong, the Pediatric Primary Care Center (PPC) underwent two major changes in the delivery of care. The first was that a team of RNs began doing newborn care coordination, changing outreach to and engagement with newborn patients. This team worked diligently to connect with parents of newborns upon discharge from the birth hospital to ensure quick and timely access to primary care and the establishment of a medical home.

In addition to this warmer welcome for families, the PPC expanded service hours and began offering extended hours and walk-in ill visits. This greatly increased the accessibility of care available to families in the PPC, enabling more families to seek care in the appropriate setting as opposed to visiting the emergency room.

CHALLENGES AND LESSONS LEARNED

Lessons Learned

Shared vision, clear metrics and a system for learning were developed from the start.

Leadership matters.

Strong leadership, effective coordination, and good communication are critically important. Timely engagement of more senior leadership to facilitate improvement is also key. Challenges must be recognized when they arise and leaders must be willing to have hard conversations.

Metrics were chosen with an understanding that achievement of positive outcomes would be required for silos to break down.

Collaboration was necessary to reach objectives.

Data were collected to drive shared improvement.

Starting with one neighborhood, partners reviewed their data weekly and shared across organizations monthly.

Population focus drives results.

Some lead metrics need a whole population denominator to ensure services reach ALL women and get to improved outcomes. Successful strategies must be spread intentionally so that the benefits are seen by all. While individual successes spur learning, outcomes will not be reached unless progress toward reaching the whole population is tracked.

Comprehensive learning is essential.

Initial theories for systems change were developed with partners based on evidence and practical experience. Resulting interventions were developed based on these drivers of change. Strategies were revised regularly based on weekly testing and learning.

Care should be mother/family driven.

Trust must be built with intentional strategies among families, providers and community partners. Trusting relationships were an essential driver of results. Women and family needs (clinical and social) were prioritized to drive the caregiving agenda for providers.

Evidence-based care must be prioritized, including early access and use of community health workers and home visitors, and also removing social barriers.

Coordination of services has real value. Good coordination required understanding the families' priorities, ensuring parents' trust is considered in provider handoffs, and attending to the details of the handoff process, including verification of success.

Place matters. Neighborhoods differ and that context is relevant to improving outcomes. It is important for healthcare providers to spend time in the community to learn from community members.

A commitment to change and a willingness to do more for families are required.

Barriers stemming from chronic social and health conditions require different, sustained communication and follow up with families. New types of partnerships across healthcare and community organizations are also necessary to meet complex health needs and removing social barriers.

Risk segmentation within a high-risk zip code was not helpful.

We abandoned traditional risk stratification in favor of universal services and system improvements in high-risk neighborhoods.

Challenges

Incentives are not aligned for community-wide outcomes, collaboration, and transparency.

Currently funding to clinics and community organizations is based upon episodes of interaction. Each entity in the system is held accountable for outcomes that do not necessarily lead to community reduction of prematurity. While costs may be reduced for the overall system by reducing extreme preterm birth and associated high NICU stays, savings do not accrue to the clinic or organization working on prevention. This contributes to silos of work and a reticence to share transparently.

Community-wide shortages of community health workers and home visitors continue to slow progress.

Connecting community care to clinical care is essential to meeting goals. After the first year, we realized that additional community health workers with caseloads of 25 families were needed. Mothers received shorter, less intensive services from community health workers or none at all. We received funding from the State of Ohio to bring more community health workers to the system, however building this capacity takes time.

There is a need to more clearly differentiate roles of home visitors and community health workers.

The roles of home visitors and community health workers are often confused. There is certainly a need to more clearly define and differentiate the two roles, including clearly outlining training and calibrating outcomes.

Spread of successful strategies takes longer than anticipated.

Neighborhoods differ widely in their resources and infrastructure. What is learned in one neighborhood may not be applicable in another. New partnerships must be developed along with new processes for engagement. It is essential to plan well ahead to address complexities of individual neighborhoods so that resources and processes for connection are up and running in tandem with spread activities.

More strategies are needed to engage hard to reach mothers early.

A small percentage of mothers continue to seek late prenatal care. While we were able to find and engage some mothers who had not connected for care, more work is needed in this area to activate the larger community.

CONCLUSION

Preterm birth is a chronic and complex issue in the United States. Few states feel the impact as severely as Ohio - which has the highest incidence of preterm births in the country.

To both understand and address this issue, StartStrong focused a collaborative group of clinical and social care providers on the important perinatal period – prenatally through 6 months of life to: (1) positively impact the lives and health of mothers and babies by transforming the delivery of care and supports, (2) make care and supports more person-centered.

While we tested many things, what became clear was that what worked best was a collaborative system with five key components: (1) dedicated RN case managers, (2) evidence-based home visiting, (3) trusted community health workers, (4) MD champions to guide the work, and (5) hospital administration support for innovation and collaborative learning, all undergirded with continuous improvement, and family-centered thinking.

Through these efforts, and we believe most importantly through the creation of an integrated and supportive team focused on care for families, we made important progress in lowering the rate of extreme preterm birth, and producing a projected savings of over $1.3 million in costs for care. In addition, more women entered prenatal care early in their pregnancy, and non-urgent emergency department utilization declined and was maintained for eight months.

The success of strategies does not guarantee quick or widespread adoption. Leadership matters, of course, and ensuring that families are continually placed at the center is key. Families must be met on their terms, and there is still much to learn about families who have not engaged with providers. Real, community-wide challenges exist, such as aligning outcomes, incentives that drive improvement and collaboration, and clear role definition for services that support families.

Bringing together various parts of a complex system with a single shared goal of providing patient-centered care, controlling costs and validating outcomes was critically important to the success of this work.

APPENDICES

COMMUNITY ENGAGEMENT

ETHNOGRAPHY

Design research uses quantitative and qualitative research methods to look at the problem differently. We sought inspiration from the real world immersing ourselves in the lives of women in Avondale – specifically understanding how they experience pregnancy, their health, and the healthcare system. Further, we wanted to develop a concrete mental model of the current system and resources that they interact with, and understand gaps between what the system provides and what women need.

We contracted with an ethnographic firm to conduct in-home interviews with 16 mothers and a few fathers (see Research Mix below) - understanding their living environment, their day to day activities, and their pregnancy experiences; and probed into the values, beliefs, and motivations that guide and shape their behaviors.

Researchers conducted 60-minute interviews with 19 community stakeholders - representatives from the healthcare industry--doctors, care coordinators, medical assistants as well as from community organizations, and faith-based organizations. They mapped the Avondale community – understanding community history, dynamics, assets, hot spots, and health resources. They hosted 6 community Write Boards at neighborhood population centers (such as the library, Hirsch Recreation Center, and the food bank) to get a broad understanding of the community's perspective about health and pregnancy.

Throughout the research process, they vetted findings through community critiques – one with a diverse set of medical, design, and research professionals; one with project leadership; and a critique of the opportunity spaces with the women who inspired the findings. Finally, they hosted a Participatory Design Studio to use our collective talent and capabilities to shape our insights and opportunity spaces into concrete concepts for transforming pregnancy outcomes.

We are grateful for the generous women, men, and professionals of Avondale who shared their stories and experiences with us. Across the board, participants made themselves vulnerable, discussing the good and bad. They rolled up their sleeves and came together in community, in service of a better outcome for families.

PUBLIC LAUNCH

The leadership team must align with critical community voices that "reach" the citizenry. The public-at-large becomes engaged when they "feel" a call-to-action and personal connection. This occurs by learning about Start Strong. Initially:

1) Messaging that resonates with the public-at-large must be developed.
2) This happens effectively through an arranged community-based focus group.
3) For example, the program name, logo and description should be developed based on input and feedback from the average community member.

Once the name and infrastructure have been developed, general communications should occur with the public-at-large via:

1) Materials (such as pamphlets and yard signs)

2) A website that explains Start Strong in greater detail
3) Through communications deployed via relationships with the news media
4) Through social media channels
5) Through public community events

EVENTS, PUBLICITY, AND PR

In order to achieve full buy-in to Start Strong, strong public relations is central as follows:

1) Relationships with news media
2) Ability to deploy and activate social media
3) Events to commemorate participants and meet program milestones

Communications Challenges:

The following communication challenges must be met to ensure success in achieving StartStrong objectives and to achieve sustained change in the relationship between the healthcare community and the community itself.

1) Communicating with parents' families and referral sources, even though certain communication, such as information about moms' group, is solid. This means opening viable pathways to these individuals through public relations and social media.
2) Creating a complete ecosystem model that takes the mother from prenatal care through the first six months of the child's life, to ensure a smooth journey. This means developing communications around these milestones and a communications pathway with the parents and healthcare providers.
3) Addressing the political climate, because there are many agencies, programs, and groups that impact the perinatal period through the babies' six months of life. This means effective partnerships with other overlapping organizations in your own community.

StartStrong Communication Strengths:

Given these challenges, StartStrong's greatest strengths lie in its public and community advocates – moms, healthcare professionals, residents, mentors, organizations. Its interpersonal communications through moms' (now known as family) groups where the groups are small congenial and focused on specific common issues.

Additional strengths include:

1) Authentic Dialogue: Embedded in community-driven approaches are hidden conversations. Start Strong has opened dialogue on issues affecting families, and authentic conversations have been raised about relationships, prematurity and care coordination.
2) Feet-in-the-Street/Block-by-Block Community Saturation: By taking information door-to-door and meeting families where they are, connections were made beyond the usual form of outreach. This strategy provided rich and full exposure to community conditions and an opportunity to build relationships and connections for the program.
3) Coordination of Care and Referrals: Care coordination has become a central point for StartStrong. We formed the Care Connections work group including providers of services ranging from community health workers to home visitors, case managers, and other community programs

engaged in effective coordination of care across the entire care continuum from the prenatal care setting through the establishment of pediatric care through six months of age.

Marketplace Assessment: StartStrong entered a community marketplace inhabited by many good and strong programs focused on young children. Public confusion is inevitable; however, StartStrong is committed to providing the best and most effective services for families, sharing credit as well as responsibility.

Purpose of Health Communications and Marketing: Health communications/marketing can raise awareness, secure stakeholders and endorsement, promote data and emerging issues to establish new standards of care, provoke public discussion, and improve provider and patient relationships, including identification of program participants referred effectively.

News Media & Collateral Materials

The activities implemented for general and mass communications in an effort to reach all audiences were:

1) Host Symposia and follow up events. The initial launch event was held in March 2014 for the Avondale Community. See Appendix A: Community Engagement Tracking for other events.
2) Website – The website was launched in the fall of 2014. It is currently being optimized for Google Analytics.
3) Five-minute video – This became problematic due to conflicting objectives and has been tabled.
4) Communications to news media – News releases and media advisory to both opinion leaders and the news media have been distributed on several occasions. See Appendix C: StartStrong Media Coverage List. Media coverage has not been a primary objective.; however, when a concerted effort was made, media coverage was good.
5) Social media is critical to all audiences – Both Facebook and Twitter have been launched. Moms use Facebook for information.
6) Yard signs, street teams, and feet-on-the-street. A logo, T-shirts, collateral materials and branding pieces have been produced and used effectively.

Measuring the Success of CE Efforts

Outcomes and Measuring Success: StartStrong exists to achieve outcomes with families and ensure a smooth transition from pregnancy to the next phase of raising healthy children during the first six months of life. The ultimate success of StartStrong resides in its ability to connect families to resources, and to engage families from pregnancy through the first six months of life. The path to success relies heavily on generating viable and effective referrals, which promotes a positive experience for families.

1) General Thematic Areas: Setting up a measurement system for the ideas contained below was a challenge to measure at the individual and community level. General Thematic areas of importance relative to community measurement include:
    a. Are we leading with sincerity?
    b. Are we building relationships and trust?
    c. Are we taking action?
    d. Does the community see progress?
    e. What does the community see as a solution to the challenge?

f. Are we reflecting and evaluating?
g. Are we celebrating?

2) Community Measurement: We have engaged the community via several methods. Of those methods, we can measure:
    a. Social Media: Candidly, while StartStrong does have a social media presence, it must be worked daily to have more impact. A special Facebook location for parents is also recommended. Proposed metrics for measuring social media impact might be:
        i. On Facebook: Number of page likes, number of comments or likes on posts, number of mentions or tags
        ii. On Twitter: Number of followers, number of retweets or favorites, number of mentions
    b. Traditional Media: StartStrong has been covered by the news media. The leadership team has determined to focus on internal and communications to families, versus the general community. However, as we "open" and expand parenting groups, media will be sought. Traditional media impact can be measured in: stories or features, distribution.
    c. Events: Although it is difficult to measure impact and different kinds of participation, we have measured participation via number of residents, clinic or agency leaders, and other community partners. Events need to be tried to reach across ages and schedules. The parent groups opened to the larger Avondale public in Spring 2015 to serve as our best central event and information location.

3) Metrics to Gauge Success:
    a. Consistent Attendance at Mom's Groups:
        i. During its first year, the focus has been on building a second group for non-first-time moms, the StartStrong Avondale Moms' Group. One measure of how well we are building relationships in the community is how many new moms attend, and how many re-attend the group. Seven of 32 unique SS/Community moms (about 22%) attended five or more moms group sessions.
    b. Attendance and Participation at other StartStrong events:
        i. Event attendance and impact – Both the attendance and feedback from participants at StartStrong events. What do those individuals that have attended have to say? Do these events matter? (See Appendix A: Community Engagement Tracking.)
    c. Expansion of Community Connectedness/teaching to fish:
    d. This speaks to mom's who have "bought in" and become volunteers themselves. Our current count is three – two moms volunteer regularly at the Avondale Caring Network Pantry on Fridays, one is now a member of the StartStrong Avondale Community Advisory Committee. These moms become advocates for new family participation.
    e. Early Enrollment/Participation: As part of the community engagement efforts, the importance of early prenatal care was a key message. A measure that would reflect the resonance of this message within the community is one that seeks to understand if behavior change occurred. Entry to prenatal care by 12 weeks, within the first trimester, was a measure selected to gauge if the message was not only received but acted upon.

CONNECTIONS AMONG SERVICES

In beginning the work of StartStrong, a group of providers across the perinatal continuum agreed to meet regularly, share with one another, and learn together. This Care Connections work group included nurse case managers from the two major prenatal care providers/birth hospitals, WIC, providers of Community Health Workers and Home Visiting services, and a representative from the neonatologists and hospitalists who see newborns in the birth hospitals. This group was able to share more about their work, generate trust, share data, and identify barriers and resources for families.

A critical tool to share information were care team consents that allowed community health workers, home visitors, doctors, and nurses to communicate across separate agencies to coordinate care and work as a team for clients. These consents allowed clinical providers to share information with trusted partners in care, and allowed those same home visitors and community health workers to provide a fuller picture of the life and challenges of families.

CARE CONNECTIONS WORK GROUP

The Care Connections work group was convened to bring together obstetric and pediatric providers, community health worker (CHW) and home visiting (HV) agencies, and other related programs (such as Women Infants and Children (WIC) and Centering Parenting at University of Cincinnati Medical Center).

The group worked to identify and share data to provide context and an understanding of how many women are being connected to services, and the effectiveness of those services at positively impacting birth outcomes. The total number of referrals and enrollments were shared monthly, as well as the average gestational age for births to women enrolled in programs. In addition, WIC was able to share data with the group as a benchmark for understanding how well the overall system of support for pregnant women was doing at connecting families to resources. Through the aforementioned shared data, a better understanding of how many women and babies were impacted by services was gained. This pointed to a gap in the number of women who could benefit from services, and those who were accessing services. To better understand why women were declining to participate in services, a survey was conducted by agencies and data were examined to identify patterns that could help shape conversations with women about the programs. Programs surveyed current participants to understand why they chose to partner with a community health worker or home visitor. Sharing of success stories for clients who enrolled with a community health worker or home visitor within 10 days of referral were also shared in order to identify reasons for success and potential best practices.

Based on the need to better connect families with community health workers and home visitors, the Care Connections team built upon the work of the Block by Block community organizing team in the Price Hill neighborhood. Agencies and providers worked collaboratively to refine a tool that would help identify family needs and link them directly to services. The tool included a table that outlined the specifics of each program, including eligibility criteria, program outcomes, and more.

To better understand the challenges of families and across the spectrum of work group members, a monthly case conference was instituted as well. Each provider agency selected a client at random and unpacked her experience prenatally through the present to understand challenges and barriers for families. Through case conferences, certain issues were identified and outside agencies be brought in to provide information and resources, or even to partner and address them. For example, this identified a

need for a better connection to mental health services for families, which we were able to bring in an agency to partner.

As other challenges and resources were identified with families, agencies and programs to help solve those problems were brought in to ensure that community health workers and home visitors had an understanding of and access to those resources. WIC shared updated information on their intake and enrollment processes, requirements and changes in program implementation. The FreeStore Food Bank shared more information about its shelter diversion/housing program. Information about the discharge processes at the two largest birth hospitals, Good Samaritan Hospital and University of Cincinnati Medical Center, was shared to give all a better understanding of the processes families go through to leave the hospital with their new baby. Finally, Newborn Care Associates, the group of doctors who see newborns while they are in local birth hospitals, presented the information they share between mom and baby's charts during their inpatient stay. This provided more insight into how community health workers and home visitors can support the bridge from prenatal to pediatric care for newborns.

Case Conferencing

Over the course of about 10 months, they key team involved in developing a new approach to prenatal care worked together to develop a process for sharing information about clients. Through this collaboration, a form and processes were developed that would put the clients at the center and allow all agencies to identify and collectively address challenges and meet families' needs.

Enabled by care team consents that allowed the sharing of client-specific information during meetings or conference calls that would help the entire care team to come together, with a shared understanding, to support families. A form was developed based on the information that was most commonly needed or desired by other parties. Specific clients were identified in advance to ensure proper preparation for case conferencing.

Legal Aid

Early on in StartStrong, a challenge that immediately surfaced was housing. Home visitors and community health workers working with families had long understood that finding affordable, adequate, stable, and safe housing was an incredible challenge. This partnership was somewhat built upon learning from an existing partnership between Cincinnati Children's Hospital Medical Center and the Legal Aid Society of Greater Cincinnati where established patients can access services through Legal Aid. After the housing issue was identified, the Legal Aid Society of Greater Cincinnati was willing to enter into a partnership to better address the needs of these families. The original intention was to partner to provide approximately 50 families in Avondale and Price Hill with the training, advice, and representation. However, the needs of the community quickly exceeded that capacity and the partnership was expanded. Understanding the magnitude of the needs identified is required for addressing issues on a community-wide basis.

In addition, through consistent and frequent communication, a regular case conference was developed. A structure and process were agreed upon by the partners to ensure better coordination among services to meet the needs of families. This work proved so critical for families and so successful that the partnership was more fully expanded by another significant grant to grow capacity and services for pregnant women at Good Samaritan Hospital. The processes improved through this work included

effective referrals targeting inadequate housing conditions. Training was provided for community health workers, home visitors, and nurse case managers to identify and support clients to mitigate poor housing conditions. A mechanism was developed for referrals to Legal Aid for situations requiring a legal remedy. Legal Aid was also a potential partner for other issues facing clients such as domestic violence and access to public benefits.

Mental Health

The Care Connections Work Group conducted case reviews to share challenges and learnings amongst organizations working in the perinatal space. Reviewing individual cases, led by a participating agency, allowed us to identify challenges families faced, and to seek ways to resolve those issues. One of the first issues identified was challenges in getting access to mental healthcare. While organizations were regularly screening moms (most using the EPDS), few had perfected a reliable way to connect to treatment options. The first step was to identify a mental health provider who was a willing partner. For this project, there was support at Greater Cincinnati Behavioral Health Services (GCBHS) to try new ways to connect with moms who may need mental health support. Once the mental health partner was onboard, GCBHS attended a Care Connections work group meeting and provided detailed information about accessing mental health services. Based on conversations, GSBHS was also willing to partner further to understand how home visiting and community health worker agencies can make warm handoffs to mental health services.

Family Strong Feast

The *Family Strong Feast* addressed issues related to trusted knowledge and community love. The Feast is intended to bring together pregnant women, new mothers, family members, residents and health are providers in the community to share a meal and get to know each other as people. These events were recurring, to establish consistency and build relationships over time. Each feast is an opportunity for developing common understanding and empathy building. Women and healthcare providers are able to consult one another in an informal setting. While families greatly valued these events, one of the greatest impacts was on the healthcare providers who returned to their clinics with renewed empathy and a commitment to serve women in the targeted neighborhood.

Personalized Contingency plans

Contingency planning was intended to support families in developing a greater sense of agency in their lives and to encourage forward thinking regarding potential obstacles or challenges.
Mothers and families work with healthcare providers to develop a personalized plan for what to do and who to call if they are worried about their families' health or safety. The model includes discussion prompts to keep mothers in conversation with their providers and templates for follow up. The benefit of these contingency plans was to equip families with the tools to make positive choices about their health and the resources they use, reducing primary care treatable emergency room visits. They were intended to move toward developing the personal power of mothers, increase their ability to futurecast and to build trusted knowledge in the community.

Personalized contingency plans utilized an interview to understand challenges and issues that families faced. They also utilized a set of cards to prompt conversations between provider and patient. The cards allowed moms to review possible topics for discussion with their obstetric provider during their visit.

Wellness Champions

The Wellness Champions concept was developed to tackle trusted knowledge, community love, and personal power. This intervention sought to develop community knowledge around pregnancy and infant health. Pregnant women co-produced messages and materials that were spread by neighborhood residents, parents and staff from neighborhood organizations. Materials included strategies for talking with neighbors, tools for documenting discussions and resources for pregnant women needing additional services. The intention of wellness champions was to increase leadership and ownership over community issues like maternal and infant well-being, build meaningful connections, provide relevant and accurate information, and to draw on existing trusted resources to build collective community knowledge. This prototype was tested in Price Hill with selected Block Captains, parents, residents and Community Matters representatives.

Pediatric Interventions

Innovation within pediatric care was rigorously pursued through StartStrong. Learnings and experience from this project have helped shape the role of a newborn nurse case manager, an "ideal" newborn visit and newborn education for families. The pediatric interventions focused on creating more seamless connections between prenatal care, birth hospitals, and pediatric care. There was also a tremendous focus on establishing a relationship with families, delivering care that the families valued and ensuring parents had the information they needed to avoid unnecessary emergency department usage. In addition to designing an ideal newborn visit, using nurse case managers for newborns, and developing newborn care education for parents, there were also improvements made to the newborn intake process, walk-in ill visits were established at the PPC, and spreading those educational activities to community programs were also tested.

Ideal Newborn Visit

Fifty parents at the CCHMC Primary Care Practice (PPC) were surveyed to better understand preferences and what they hope to get from their newborn visits. Using the results of the survey, a multidisciplinary team was brought together to design the "ideal" system of care to address families' medical, social, and health-promotion needs in the first 30 days of life. The team customized newborn visits based on individual patient characteristics (e.g. breastfeeding vs. formula feeding, first-time mom vs. experienced mom, high social need vs. lower social need). Moreover, by continuing to survey and collect feedback from parents, the team at the PPC worked to build trust, improve hospitality and improve the continuity of care during the newborn period.

Unfortunately, through designing an ideal visit that ensured families could meet with all available supports within the PPC, the visit length could be extensive. The PPC offers not only clinical care, but also social work, lactation support, and more. Education would also be provided to families (see below for more on Newborn Education) during the visit to address caring for common newborn concerns. Despite lengthy ideal newborn visits, families expressed satisfaction with the care received, there was a demonstrated increase in competence and confidence in infant caregiving, and most importantly, a willingness to seek help from primary care providers.

The ideal newborn visit is comprised of pre-visit, in clinic, and post-visit activities. These activities are completed by an identified staff member on a clear, documented process map. Pre-visit activities include welcoming the new patient and scheduling the appointment; reviewing the discharge summary

to identify social or clinical needs and communicate with social work or clinical teams as needed; identifying and making referrals based on results from the newborn screen, such as hearing; and identifying if moms are breastfeeding in order to ensure they are provided with support to be successful.

Once the family is in the clinic, they sign in and complete consent forms. Once in the room, the RN or MA joins the family in the room and completes an education module and shares a card with links to newborn care educational videos. These videos were developed by the team to address the most common reasons newborns were seen in the emergency department (common skin conditions, umbilical cord care, and more). During the appointment, families identified as high risk for social needs are met by a social worker. If the mother has chosen to breastfeed, the nutritionist or lactation consultant can provide counseling and a referral for a breast pump can be made if needed. The newborn and family are, of course, seen by a resident and an attending physician for care. Finally, after the visit, the discharge process is begun. During that process, the next appointment is scheduled and families are directed to additional clinical care as needed or seen by ancillary staff. If the mother is breastfeeding, a follow-up phone call is made a week later to help support families and ensure proper weight gain. If the newborn requires a weight check, social work or nutrition may see the family at that visit if they are high risk.

RN Case Manager

The RN Case manager for newborns played a critical role in getting families connected to pediatric primary care after birth. The RN case manager conducts outreach to families of newborns who have indicated they will seek care at the Cincinnati Children's Hospital Medical Center Pediatric Primary Care Center. Establishing a connection to a medical home is important for all newborns, and the nurse case manager plays a key role in ensuring a connection and first visit as soon as possible. These critical first days are the days in which breastfeeding can be established and that the new baby being welcomed home is connected to care that can support a long and healthy life. The nurse case manager can also triage common non-urgent concerns (e.g., rash, conjunctivitis, umbilical hernia) to avoid unnecessary pediatric ER visits.

Newborn Education

CCHMC's pediatric primary care center conducted a review of reasons for emergency department visits for infants under six months of age. With a pareto of most common preventable conditions in hand, the team began work to develop educational materials to help families care for their child at home or to encourage them to see their primary care provider. This work was intended to reduce non-urgent newborn visits to the emergency department by designing preventive care that is valued by parents and to provide education about common newborn illnesses and conditions.

The education began with creating laminated cards of those common conditions (rashes, stool, and umbilical cords) that the nurse would review with families during their first visit. Six newborn education videos were developed and tested with families: Welcome to the Pediatric Primary Care Center (PPC), Umbilical Cords, Newborn Skin Conditions, Suctioning the Nose, Infant Stool, and Thrush. However, delivering face-to-face education during the visit, delivered by a nurse, proved to be the most effective

way to teach information to the parents. While the link was also provided to families to watch and reference later, this resource was rarely utilized by families outside of the care setting.