Useful Steps for Developing a

Perinatal System of Care.

Useful Steps to Develop a **Perinatal System of Care**

A resource produced by
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Introduction

Background

This Perinatal System of Care Toolkit was developed as part of an Agency for Healthcare Research and Quality (AHRQ) demonstration project to improve the processes of prenatal and postnatal care at a community level, for a population of Medicaid-insured women. While evidence-based enhanced prenatal care (EPC) and home visiting programs exist, new knowledge is needed to better understand how to link clinical practice and community-based programs and reach women who need services most, achieve population impact, and reduce persistent health disparities.

Purpose of Perinatal System of Care Project:

- Develop a perinatal system of care for a county population of Medicaid-insured women, including increase risk screening, improve early access to care, link clinical and community providers, increase care coordination, and improve the process of care for an underserved population of pregnant and postpartum women and infants to reduce persistent health disparities.
- Use process improvement methods at the community level to map current and future states and support implementation efforts.
- Use the Chronic Care Model as a framework to guide the development of the system of care and choose core implementation strategies.
- Track population health service and outcome indicators to monitor impacts of the system of care in Medicaid-insured pregnant women and their infants.

Purpose of the Perinatal System of Care Toolkit:

- Provide guidance and resources for practitioners, communities or policymakers who are interested in addressing persistent socio-economic and racial/ethnic health disparities in Medicaid-insured women through a population perinatal system of care approach.
- Describe how the work was done, what strategies were used, lessons learned, and sustainability/cost issues.

How to use the Toolkit:

This toolkit will help you to think about a community-based, perinatal system of care approach to reduce maternal and infant health disparities, or the steps to get an initiative started, or how to identify strategies that might enhance your existing community efforts.

How you use the toolkit will depend on your needs. You can pick and choose by your interest or follow the process of building and implementing a system of care. It is important to note that while we describe the process and the strategies that were used, a system of care is unique to the community it serves. Indeed, you will see how different community agencies took the strategies and tools and implemented them in unique ways that fit their settings even within the same community.

Why is the care of Medicaid-insured pregnant/postpartum women important?

- Almost half of all births in the U.S. are covered by Medicaid.
- Many Medicaid-insured women live in difficult life circumstances, suffer from chronic stress, experience racism, and are more likely to have chronic medical conditions (e.g., depression, hypertension).
- Further, Medicaid-insured women are more likely to have more limited access to health care, face health literacy barriers, and have to navigate a fragmented health and social services system of care.
- Competing family priorities and lack of basic health resources (e.g. child care, housing instability, and food inadequacy) also affect women's health and challenge participation in health care and other services that can help.
- From a population perspective, maternal and infant health disparities persist, including maternal morbidity and mortality and adverse birth outcomes (preterm birth, low birthweight). This is especially true for African American women and other women of color. There is also growing evidence of the impact of social determinants on reproductive health and lifelong infant health and development.

Key Point:
Even though selected EPC and other evidence-based home visiting programs have been shown to improve health outcomes, the challenge remains as to how systems-based work can best be accomplished, at practice and community levels, to achieve population impact and reduce disparities for Medicaid-insured pregnant women.

What is enhanced prenatal care for Medicaid-insured pregnant women?

- Recognizing the additional needs of low income women, a generation ago, Medicaid insurance was expanded to improve access to prenatal care (PNC) and additional federal funds were made available to states for Enhanced Prenatal Care (EPC) to supplement traditional prenatal care (PNC).
- EPC can include care coordination, risk screening, brief psychosocial counseling, health education, and home visits, with 66% of all states currently offering an EPC Medicaid benefit.[1]
- The Department of Health and Human Services (Centers for Medicare & Medicaid Services (CMS), the Health Resources and Services Administration (HRSA), and the Administration on Children and Families (ACF) have recently considered how EPC could be reimagined. Through the federal Strong Start initiative, EPC models of Maternity Homes, Birth Centers, and Centering Pregnancy/Group visits are being demonstrated and tested.
- Further, Medicaid (CMS) recently convened an expert panel to assimilate the best available evidence in both clinical science and policy to address persistent disparities in maternal child health and make recommendations for care so that all women and children have the best chance to survive and thrive.[2] The panel reiterated support for EPC and risk-appropriate prenatal care for the most vulnerable women and recommended:
  - » Earliest possible risk screening of all Medicaid-insured pregnant women.
  - » Support for integrated systems of prenatal care that address medical and psychosocial risk factors.
  - » Programmatic efforts to keep the most vulnerable and high-risk women engaged in enhanced services.
  - » Support for expansion of mental health services
  - » Financing for an enhanced level of prenatal care for those identified as high risk for adverse outcomes.

Key point:
Improving population impact is largely dependent on whether or not the people at highest risk and/or who need resources the most actually access a program early in pregnancy and agree to participate in services.

What is a community system of care?

Population change in health disparities will need to come from better cross-sector coordination, requiring many different players to change their practices in order to solve complex problems, rather than from the isolated intervention of individual organizations. A system of care suggests that substantially greater progress could be made in alleviating many of our most serious health problems, especially socioeconomic and racial ethnic health disparities, if nonprofits, government, businesses, and the public were brought together around a common agenda to create collective impact.

We adapted the system of care definition and approach for this project, from Stroll, Belau, & Friedman, 2010.[3]

- A system of care is a spectrum of effective, services and supports for Medicaid-insured women and infants.
- Services are organized into a coordinated network to meet the needs of Medicaid-insured women, building meaningful partnerships with women to help them improve their health.
- The availability of care coordination for Medicaid-insured pregnant women, through the EPC Medicaid benefit, makes EPC a foundational piece for a system of care.

Features of a system of care approach.

- Maximizes the utilization of existing community resources.
- Integrates processes and linkages where needed.
- Builds connections across an array of fragmented services.
- Delivers services that reflect the cultural, racial, ethnic and linguistic differences and preferences of the populations served.
- Provides care management for women with multiple risks and complex needs to ensure that multiple services are delivered in a coordinated way as their needs change.

Key Point:

Although based on common beliefs and features, system of care is a concept, a guide, to implement the concept in a way that fits a particular community… each community must engage in its own process to plan, implement, and evaluate their system of care…and will be implemented differently in each community based on their own resources and services.
(Stroll, Belau, & Friedman, 2010)

[1] Johnson CB and Witgert KE. Enhanced Pregnancy Benefit Packages: Worth Another Look. Portland, ME: National Academy for State Health Policy; 2010.
[2]Applegate M, Gee RE, and Martin Jr JN. Improving maternal and infant health outcomes in Medicaid and the Children's Health Insurance Program. Obstetrics & Gynecology, 2014; 124(1), pp.143-149.
[3]Stroul B, Blau G, and Friedman R. Updating the system of care concept and philosophy. Washington, DC: Georgetown University Center for Child and Human Development, National Technical Assistance Center for Children's Mental Health; 2010.

What EPC services are provided in Michigan, the site of the demonstration?

There is great variation in all communities and states regarding the availability of services to Medicaid-insured pregnant and postpartum women and infants. In order to understand the system of care in the county of the demonstration project, we describe state-sponsored and local services that are available to women.

In Michigan, the site of the demonstration, about 44% of all births are paid for by Medicaid insurance. All Medicaid-insured pregnant women are eligible for the Michigan EPC program (Maternal and Infant Health Program) which supports the provision of comprehensive risk screening, care coordination, and risk specific interventions by nurses and social workers who reside in 83 Michigan counties.

Michigan's EPC program includes:

- Comprehensive risk screening at prenatal and infant enrollment:
  - » Embedded standardized assessments: Edinburgh Depression (EPDS), Perceived Stress (Cohen), Abuse Assessment Screen (ASA)
  - » Social Determinants of Health assessment: housing, food adequacy or employment.
  - » Health, illness and service utilization.
  - » Other risk factors.
- The development of an individualized plan of care, incorporating the beneficiary's stated needs, goals and resources.
- Standardized, risk appropriate services are provided based on a beneficiary's risks.
- Assistance with locating resources and facilitating connections with providers of services and supports; advocating on behalf of the beneficiary to obtain services, if needed.
- The Michigan Department of Health and Human Services and the Maternal and Infant Health Program provide extensive program materials on a website *http://www.michigan.gov/mihp/*.

Are Michigan's EPC services effective?

- The program has been rigorously tested in quasi-experimental propensity match analyses.
- The EPC program demonstrated significant improvements in the reduction of risk for preterm birth and low birthweight for all women, and notably for African American women; reduction in depressive symptoms; improvement in service utilization and other outcomes were also achieved.
  - » Meghea CI, You Z, Raffo JE, Leach RE, Roman LA. *Statewide Medicaid Enhanced Prenatal Care Programs and Infant Mortality*. Pediatrics 2015;136(2): DOI: 10.1542/peds. 2015-0479.
  - » Roman LA, Raffo JE, Zhu Q, Meghea CI. *A Statewide Medicaid Enhanced Prenatal Care Program: Impact on Birth Outcomes*. JAMA Pediatrics. 2014; 168(37): 220-227.
  - » Meghea CI, Raffo JE, Zhu Q, Roman LA. *Medicaid Home Visitation and Maternal and Infant Health Care Utilization*. American Journal of Preventive Medicine. 2013; 45(4):441-7.

How are EPC services provided in Michigan?

- Medicaid Health Plans contract with certified EPC programs, which typically are Federally Qualified Health Centers (FQHC); home health agencies, hospital-based clinics, Native American tribes, private providers, and local and regional public health departments.
- Providers and agencies choose to provide EPC services and are reimbursed through the Medicaid Health Plan on a standard fee schedule.
- Communities vary with the number of agencies that provide services.
- There are no resources for EPC outreach and engagement, and individual agencies determine their target populations.
- Many of the non-profit providers support the program through additional funding to reach higher risk women as Medicaid reimbursement is limited to face-to-face risk screening and intervention visits.

Who does the program reach?

- Although all Medicaid-insured pregnant women are eligible for EPC in Michigan, about a third of all women are enrolled in MIHP.
- About 40% of women are screened at high risk; a third report mental health diagnoses or concerns; more than 40% report chronic illnesses with half indicating they are currently under care; and a third have had prior pregnancy complications.
- Overall, a third of women are enrolled in the first trimester and about one in five are enrolled in the third trimester.

For a population system of care approach, the potential for women to have risk screening and care coordination as a Medicaid benefit makes EPC a central component of a system of care model.

How does Michigan's EPC serve women who may be harder to reach and engage?

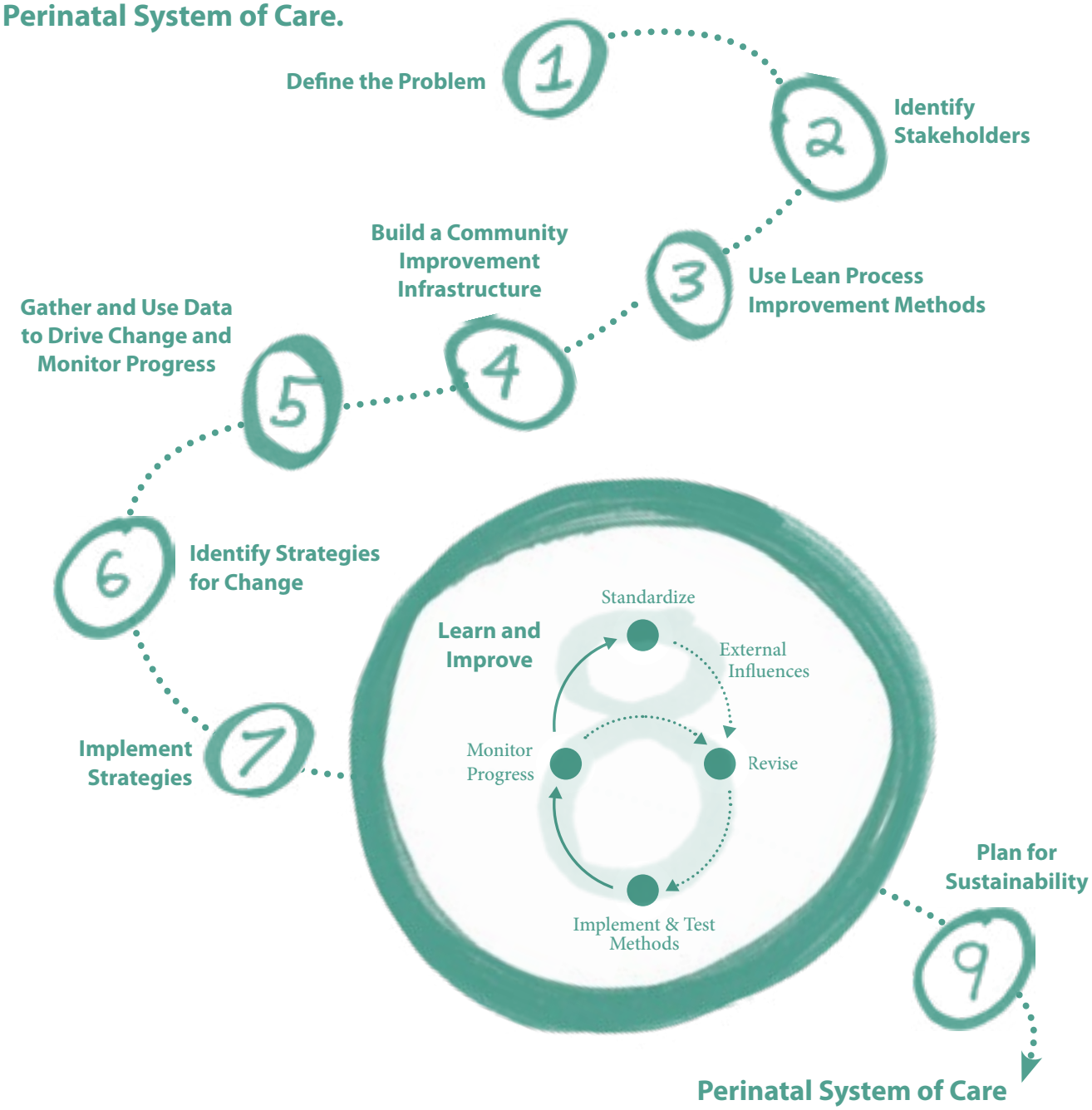
- There are federal Healthy Start programs in Michigan with additional resources for services, especially for African American women at higher risk for adverse birth outcomes and infant mortality.
- Some of the programs choose to use resources to supplement MIHP with a Community Health Worker (CHW) team approach.
- CHWs are respected frontline health workers who typically come from the community they serve. They bridge cultural and linguistic barriers to care, provide supportive engagement and links to community resources, and empower women to improve their health and life chances.
- The Healthy Start (HS) program in the community of the demonstration, Strong Beginnings, is a collaborative service model (EPC plus CHW) in four of the EPC provider agencies that targets African American and Latina women.
- Prior unpublished evaluations of HS programs have documented that the EPC-CHW model reaches women at higher medical and psychosocial risk than EPC, and demonstrated a reduction of risk for preterm birth outcomes for African American participants.
- The HS program, and participating agencies, is a key collaborator in the way community systems work.

Are there other home visiting programs, in addition to EPC and Healthy Start, in the state?

- Nurse-Family Partnership Program for first-time, young pregnant women.
- Families can also enroll in Healthy Families, a Healthy Families America program.
- Michigan also has Early Head Start and Parents as Teachers (all HV programs.)

Overview.

Useful Steps for Developing a Perinatal System of Care.



Step 1: Define the Problem.

Goals:

- Learn about the data and studies required for a baseline assessment.
- Create a baseline assessment from the collected data.
- Use the same studies for future assessments.

1.1 Use existing data sources to define the problem at a population level.

Baseline county-level assessments on maternal and infant health and health care indicators are important to inform the selection of improvement strategies and monitor how changes might impact key health indicators. Start with using available reports on county and community level indicators.

- Access state and county-level public health data often available through the web or formal reports. Findings can lead you to partners that may be important to your work.
- Partner with your county health department epidemiologists about existing reports and to identify others who might be tracking the health indicators that are important to you.
- Hospitals/health systems often collaborate with local public health departments as they are required to conduct Community Needs Assessments every three years. Reports from their assessment are typically available and may provide important information.
- Explore options with state level vital records and epidemiology staff for help identifying data resources. In Michigan, county-level vital records, infant mortality and select prenatal health indicators are available on the Michigan Department of Health and Human Services website. Often data is reported by race/ethnicity, which is helpful when considering disparities.
- Universities, especially those with public health, health policy and medical education programs, can be a source of help. For this project, the community partnered with Michigan State University and the Michigan Department of Health and Human Services to examine data already collected by the state, such as vital records, Medicaid claims, and EPC program data. The state and the university had an existing partnership for other maternal and child health work that facilitated access to linked data with appropriate data use agreements. Further explanation of this partnership is discussed in step five.

Key Point:

Begin defining the problem with existing data and reports.

1.2 Create a baseline assessment.

Identify which data indicators could best inform your work early in the process. Although you will want to gather typical county indicators, like low birthweight and preterm birth, search for data that aligns with what you hear community stakeholders are most worried about or want to fix. A comprehensive baseline assessment of the demonstration population will inform and guide your work and also allows you to measure progress.

For example, the demonstration county was concerned that all Medicaid-insured women were eligible for EPC, yet health disparities persisted. Therefore, in addition to basic demographic information, they wanted to know more about how EPC and other health services were delivered in the community. The EPC providers, who upload the comprehensive risk screener information to a state database, wanted to know the risk characteristics of the women they were enrolling in services. Selected data indicators describing. Medicaid-insured women in the demonstration county, when the community initiated improvement are reported.

1.2.1 Basic socio-demographic information

- Overall, 4,484 Medicaid-insured pregnant women gave birth resulting in a live singleton birth in the demonstration county, 2009.
- 60% of women had a prior pregnancy.
- For 44%, the current pregnancy was considered a rapid repeat birth (within 18 months).
- 45% of women were African American, Latina or other racial/ethnic minority.
- African American women had greater adverse pregnancy outcomes (low birthweight, preterm) and were more likely to have a chronic illness (hypertension, asthma, diabetes).
- Only 6% of all Medicaid-eligible women in the county had a depression-related diagnosis during pregnancy.
- Over 20% said they smoked during pregnancy based on self-reported information on the birth record of their newborn.

1.2.2 Prenatal and postpartum services

- About 26% of all Medicaid-insured women in the demonstration county received inadequate prenatal care.
- Almost 40% of women had emergency department claims during pregnancy and 25% had a pregnancy test in the emergency department.
- Overall, only 33% of women were enrolled in EPC; a third of which enrolled in EPC in the first trimester of pregnancy; therefore 12% of all Medicaid-insured women enrolled in EPC in first trimester of pregnancy.
- Forty-five percent of eligible African American pregnant women enrolled in EPC.

1.2.3 Characteristics of women in EPC with risk screening

- Most women enrolled in EPC have a mistimed pregnancy (69%) and about a quarter of women have had a prior pregnancy with pregnancy complications or an adverse birth outcome.
- Many women have serious health problems: 37% report a chronic disease (hypertension, anemia/sickle cell, diabetes, asthma, heart/lung/kidney); 53% have BMI of overweight or obese; 18% currently smoke and 13% use illicit drugs.
- Approximately 30% of the EPC screened women are at high risk, as defined by the state's program EPS risk algorithm.
- Over 33% of the women enrolled in EPC in the first trimester and 24% of the women enrolled in the third trimester were at high risk.
- More than half of all women met BMI criteria for overweight or obesity, with 28% scoring as obese; 37% of women reported a chronic disease.
- About 22% of women reported food inadequacy and 25% housing insecurity.
- 36% reported a history of a serious mental health problem, 13% acknowledged current illicit drug use.
- About 35% had mild to moderate-severe depressive symptoms (measured by the Edinburgh Depression Scale), half of which exhibited severe symptoms.

1.2.4 Infant health outcomes and service utilization

- Eight percent of the infants in the demonstration county were born preterm and 6% at low birthweight; 12% preterm births (10% low birthweight) among African American women and 9% (6% low birth weight) among women of other races and ethnicities.
- Close to 69% had the appropriate number of well-child visits over the first year of life.
- Over 50% of the infants had one or more emergency department visit during the first year after birth.
- Approximately 18% of the infants had an asthma-related diagnosis, 39% had ear infections and 14% had bronchitis in their first year of life.

Step 2: Identify Stakeholders.

Goals:

- Discover key players and intricacies of your local health care system.

We recommend the following stakeholders:

- Women who were pregnant at the time or recently pregnant.
- Providers and staff from pregnancy testing centers.
- Health plan personnel.
- State health department program policy makers.
- Physicians who provide prenatal care and/or labor and delivery.
- Frontline staff among practices who provide prenatal care.
- EPC providers.
- Federal Healthy Start providers.
- Health system leadership and hospital staff from labor and delivery.
- Leadership from local health department and FQHCs.
- Researchers.
- Others as identified.

More information about stakeholders and their roles may be found in Agency for Healthcare Research and Quality, Effective Health Care Program. *Stakeholder Guide 2014*. AHRQ Publication No. 14-EHC010-EF. *https://www.ahrq.gov/research/findings/evidence-based-reports/stakeholderguide/index.html*. Published February 2014. Accessed May 8, 2018.

Key Point:

Stakeholders should include a wide range of people who are involved with health decisions and health care. The unique perspectives from each stakeholder allow a robust understanding of a system of care and assists with providing actionable solutions to real issues within the community's system of care.

Step 3: Use Process Improvement Methods.

Goals:

- Use lean strategies or other improvement methods to better understand processes of care.

3.1 Lean strategies.

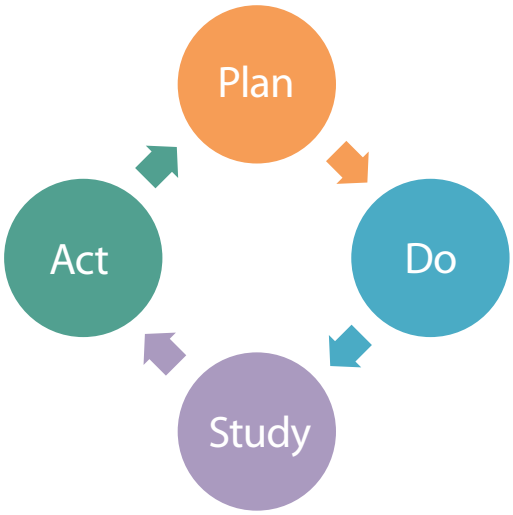
- For this project, stakeholders selected lean process improvement strategies.
- Lean process improvement is often used in health care to improve care across multiple units, with multiple providers.
- Lean methodology uses specific tools and an organizing framework to visualize issues with a system through the lens of those using it, patients and providers.
- The tools are also useful with creating dialogue, building consensus, aligning efforts, solving problems, and planning among multiple health care staff members and disciplines.
- The demonstration county used these tools to help identify, plan, implement, and improve the community's perinatal system of care across multiple stakeholders who service Medicaid-insured pregnant women including pregnancy testing centers, health plans, state and local policymakers, physicians, frontline practice staff, EPC providers, federal Healthy Start providers, and leadership from hospital systems, local public health and FQHCs.
- Common to other states, the state of Michigan offers Medicaid-sponsored enhanced prenatal care (EPC), a home visiting program designed to serve Medicaid-eligible pregnant women and infants in efforts to ameliorate poor maternal and child health outcomes.
- Yet, at the time of community efforts for this project, in Michigan only 30% of eligible women were risk-screened and enrolled in EPC and many (30%) enrolled in third trimester of pregnancy.
- Thus, the local community used lean methodology to better understand how a Medicaid pregnant woman navigates the perinatal system of care from realizing she may be pregnant to eight weeks after birth in efforts to identify when and how women are connected to EPC services.

Key Point:

The lean process improvement methodology helped the stakeholders focus on the woman's journey through care and make the community perinatal system of care simpler and better coordinated.

3.2 Lean process improvement tools used.

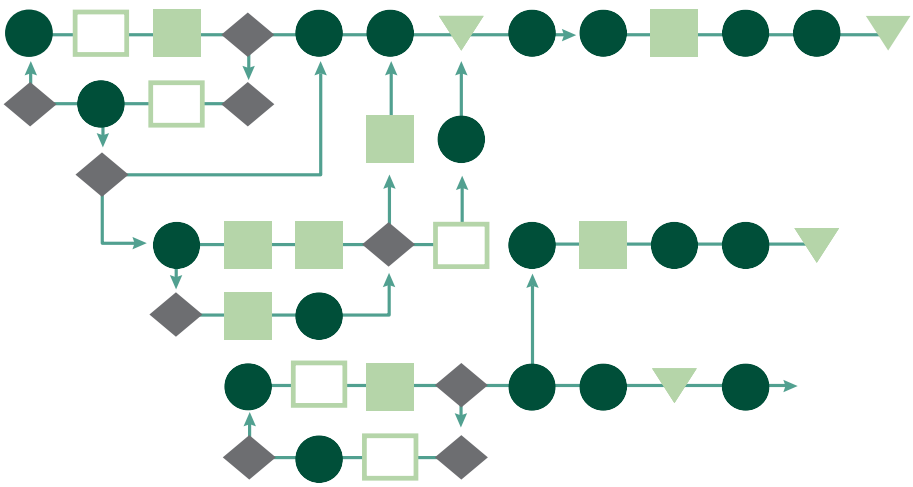
- The community used two main lean process improvement tools: 1) A3; and 2) process mapping.
- An A3 is a large one page planning document used to guide discussion and detail issues, goals, plans, and decisions of the project.
- The document can be adapted to fit your needs but often includes identifying the problem and why it's important, defining the target population, defining the start and end of the system to improve, describing what is happening in the current system, identifying metrics for measurement, identifying reasons why the current state doesn't work, documenting how to improve the current state, documenting an experiment cycle (plan-do-study-act) and the final state based on improvements made during the experiment cycle and lessons learned.



A3 Project Title:	PI Facilitator:	Date:
Business Case (Plan)	**Gap Analysis (Plan)**	**Completion Plan (Do)**
What is the problem and why is it important?	Why is the problem happening?	Who will do what?
Current State (Plan)	**Hypothesis (Plan)**	**Confirmed State (Study)**
What is happening now? Picture what is happening now. With process mapping, document the steps patients need to take for care from start to end. Include documenting time periods between each step, called "wait" time. What indicators/outcomes will help you monitor improvement and what are they now?	If improvements are made, what could happen? If we…., then we expect…	What happened? How did the indicators improve?
Future State (Plan)	**Experiments (Do)**	**Lessons Learned (Act)**
How do you want it to change or improve? Picture how you want to change or improve the process (improve the process map). By how much do you want to improve the identified indicators/outcomes?	What will you do?	What did you learn?

Example of an A3.

- The current and future state section of the A3 also includes the exercise of process mapping.
- Process mapping visualized the steps Medicaid-eligible pregnant woman took and decisions they had to make in order to receive medical care and get connected to community resources such as EPC.
- Most importantly, process mapping also generates questions and information gathering among the participants doing the mapping.
- With this project, we mapped the steps a Medicaid-eligible pregnant woman would need to take to receive care and community resources until eight weeks after birth.
- We were particularly interested in how women are connected to EPC.
- Thus, a mapped step included a woman's first call for a prenatal appointment. The action of what happens during the call naturally generated many questions within the group:
  - » What information is collected?
  - » How long do you wait between the call and the first appointment?
  - » What happens when she calls and the practice isn't accepting new patients?
  - » What about insurance?
  - » Does she have to enroll in Medicaid before she calls for care or does the medical office have staff to help her enroll?
  - » Do you recommend EPC services at the first call?
- The group gathered a lot of knowledge of the process for one simple step. It's also why it is imperative to include patients and frontline staff from as many different aspects of care within the system, so questions can be answered.



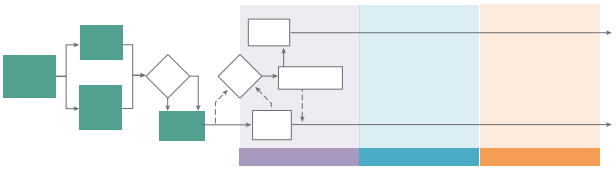
Example of a process map.

3.3 Abbreviated examples from the demonstration county.

Business Case

The state of Michigan offers Medicaid-sponsored enhanced prenatal care (EPC), a home visiting program designed to serve Medicaid-eligible pregnant women and infants. With the program, a nurse or social worker conducts risk assessments, care coordination, education, and other referrals to community resources in efforts to ameliorate poor birth outcomes. Yet, at the time of community efforts for this project, in Michigan only 30% of eligible women were risk-screened and enrolled in EPC and many (30%) enrolled in third trimester of pregnancy.

Future State



Targeted outcomes:

- Increase overall engagement into EPC.
- Increase EPC enrollment of African American women.
- Increase total first trimester EPC engagement.

Current State

Targeted outcomes:

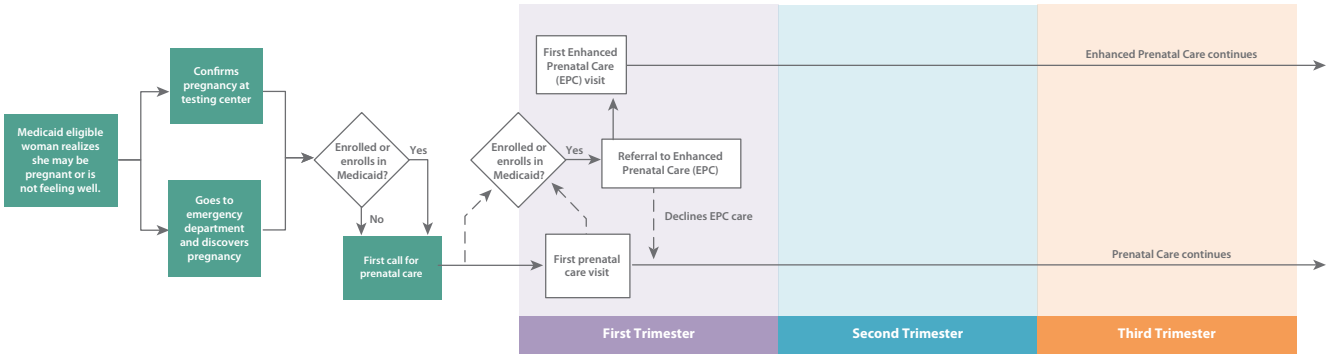
- Overall engagement into EPC: 33%, 2009.
- EPC enrollment of African American women: 45%, 2009.
- Total first trimester EPC engagement: 35%, 2009.

Action Plan

Create direct linkages with prenatal care practices and other community resources to increase EPC enrollment and timing.

Specific strategies are described in a following chapter.

Summary of future demonstration county process map.



The development of the A3 activated the community into action. Early adopters initiated "just do it" strategies on their own and in collaboration with partners.

1. The local EPC partners collaborated in the development of an education sheet on what to do if you are pregnant and think you may be Medicaid-eligible for community wide distribution, and decision trees to help guide providers with making client referrals to community resources and services.
2. The local public health department, which provided EPC, required in-house Medicaid outreach and WIC staff to refer eligible women to the program.
3. The local FQHC, which provided enhanced prenatal care and medical prenatal care located in the same building, and physician leadership who recognized the benefits of EPC initiated a welcome visit to be completed before prenatal care begins. Further description of this strategy is included in the Strategy Section of this toolkit.
4. After the development of the community A3 document, we also continued to collect information to help inform the gap analyses and assist with community decision making for further development of the community system of care. Publication: Raffo JE, Gary M, Forde GK, Meghea CI, Roman LA. *Physician Awareness of Enhanced Prenatal Services for Medicaid-Insured Pregnant Woman.* Journal of Public Health Management & Practice. 2014; 20(2): 236-239.
5. Community partners created and distributed EPC educational tools for physicians and medical practices to increase awareness of EPC services.

3.4 Recommendations.

In order for other communities to conduct their own lean process improvement initiative, we recommend:

1. Learn more to fully realize the possibilities of change with the process.

- Books, publications, online education and in-person trainings are available. Examples are listed below.
- You may also find other education and training resources through a local health system, university that provides medical care, or other agencies specializing in lean process improvement or quality improvement.

Suggested books:

- Shook J. *Managing to Learn, Using the A3 Management Process to Solve Problems, Gain Agreement, Mentor, and Lead.* Cambridge, MA: The Lean Enterprise Institute; 2008.
- Rother M, Shook J. *Learning to See, Value-Stream Mapping to Create Value and Eliminate Muda.* Brookline, MA: The Lean Enterprise Institute; 2003.

Suggested publications:

- Lee, T. (2016). *Lean and Six Sigma: these process improvement strategies from the business world can be used effectively in your office.* Contemporary OB/GYN. 2016; 61(6), 28-35.
- Kim CS, Spahlinger DA, Kin JM, Billi JE. *Lean health care: what can hospitals learn from a world–class automaker?* Journal of Hospital Medicine. 2006; 1(3), 191-199.

Suggested online education:

- Lean Enterprise Institute, Online – *Introduction to Lean Thinking and Practice*. *https://www.lean.org/Workshops/WorkshopDescription.cfm?WorkshopId=123*. Accessed April 24, 2018.

Suggested in-person training:

- University of Michigan, College of Engineering Integrative Systems + Design. *Professional Programs Lean Health Care. http://isd.engin.umich.edu/professional-programs/lean-health care/index.htm*. Accessed April 24, 2018.

2. Partner with or employ a professional lean process improvement engineer or consultant.

- Mapping systems of care that include services or care from multiple agencies can be difficult without an expert helping you through the process in the beginning.
- You may be able to partner with a local hospital system, health plan, or a university system that has consultants on staff.
- Agencies specializing in quality improvement may also have experts available to assist.

3. Use findings from the baseline assessment as discussed in a previous chapter.

- A key component of process improvement methodology is to use common metrics and the acquisition of population data to better understand the problems, inform the identification of population improvement targets and monitor indicators during change.
- Baseline city, county or state health and health service indicators can be used to guide targets for improvement and tracking indicators over time.
- Local health departments, health systems and their required community needs assessment, state health departments, and state and regional universities often have data that can be used.
- Gather as much information and data as you can before the planning session to help inform the A3 process.
- Data can help give direction with the process map especially when the group may be "stuck" on mapping all the nuances of how a woman enters different points of care.
- Stick with mapping the majority of women. There will always be a small group of women who enter care or takes steps differently. You may lose focus trying to map the different few. We recommend noting the nuances in the process to identify differences but focus on the majority unless the nuance affects the desired outcome.

4. As mentioned in the previous chapter, identify and create a community multidisciplinary group of stakeholders.

- A multidisciplinary group of stakeholders should include patients, frontline office staff, physicians, nurses, and leadership from all aspects of a perinatal system of care starting from when a woman realizes she may be pregnant to 6–8 weeks post birth or longer if you wish.
- This would involve but is not limited to pregnancy testing agencies, Medicaid outreach and enrollment, medical practices that provide prenatal care, health plans, various enhanced prenatal care providers, local Healthy Start program, community resources, or other services.

5. Organize a 1–2 hour meeting with the community multidisciplinary team and your lean process improvement engineer that includes basic education on lean process improvement (what it is, how it's used, what it planned for the 1–2-day process mapping session) and initial completion of the business case within the A3 planning document.

- Leadership will then have a better understanding of your efforts and assist with identifying additional staff for process mapping and further A3 completion.

6. Plan a 1–2-day process mapping session with the full multidisciplinary team and your lean process improvement engineer to continue completion of the A3 planning document together.

- Use the abbreviated version of the A3 planning document example with the demonstration county with the multidisciplinary team.
- The expanded version of the A3 document depicted in section 3.2 can be used to plan and implement strategies with specific agencies.

Step 4: Build a Community Improvement Infrastructure.

Goals:

- Support system efforts and reduce barriers to change.
- Create core redesign strategies.
- Prepare for tracking, monitoring outcomes, and focus groups.

4.1 Build infrastructure to conduct and expand the A3 action plan as knowledge grows.

- Invite members of the community stakeholder's lean process improvement team and new members as needed to be part of a collaborative project infrastructure and identified outcome measures.
- The infrastructure will guide project work.
- For the demonstration county, the infrastructure served as the Strengthen Community Action component of the Expanded Chronic Care model, a framework chosen to guide the development of the community's system of care. This is further discussed in step six.
- Time commitments from primary collaborators were required for the planning and implementation phases.
- Use a project manager to support coordination of team and workgroup activities.
- Or, identify a person to coordinate and manage the work. Select someone whose work aligns with your efforts and who may be willing to help.
- For the demonstration county, relationships among and between stakeholders, organizational commitment and leadership, at the highest level, were critical to developing and implementing a population approach to the care of Medicaid-insured women.
- State policymaker participation was important to align community efforts with Medicaid and Michigan Department of Health and Human Services and, in turn, inform program and policymakers with their own program and policy decisions.
- We recommend forming the following three teams: Executive Advisory, Action Team, and Collaborative Evaluation Team.

4.2 Form an Executive Advisory Team.

- Include high level administrators from key partner agencies.
- Identify co-chairs.
- Meet quarterly in first implementation year, and as needed in following years.
- Monitor progress on key indicators.
- Assist with community accountability.
- Provide vision priorities.
- Provide advice and counsel.
- Remove barriers to carry out system design.
- Focus on policy and strategy deployment.

Key Point:

Community work can't be done alone.

4.3 Form an Action Team.

- Identify co-chairs.
- Include a representative per partner agency and consumers. (Women who are or recently were pregnant and a Medicaid beneficiary).
- Meet monthly in year one and as needed in following years.
- Design strategies for implementation.
- Assist with the development of patient and provider decision support tools, define roles/responsibilities, standardize interventions across team care (EPC, PNC, Managed Care, and Mental Health), and identify information technology needs.
- Create subgroups (Prenatal Care Practices, Community Health Worker, Mental Health) and prioritize work.
- Put the strategies together (system of care model) and test it.

4.4 Create a Collaborative Evaluation Team.

- Identify co-chairs.
- Meet monthly in year one and as needed in following years.
- Identify data sources, data access, linking, and management.
- Refine evaluation design and methods.
- Conduct data analysis.
- Provide data interpretation, reporting and presentations.
- Conduct quality improvement activities (data tracking, dashboards, etc.).
- Complete population baseline study.
- Conduct first-year formative evaluation.
- Provide guidance on system design development and measurement.
- Complete and maintain IRB approvals and data agreements.

Step 5: Gather and Use Data.

Goals:

- Use mixed methods evaluation.

5.1 Secure population data—quantitative data.

In order to improve population health, baseline city, county or state health and health service indicators can be used to guide targets for improvement and track indicators over time. Local health departments, health systems and their required community needs assessment, regional health information exchange, state health departments, and state and regional universities often have data that can be used.

In the demonstration county:

- In Michigan, the Department of Health and Human Services (MDHHS) creates and manages a statewide data warehouse which includes vital records, Medicaid claims and EPC program data for mother-infant pairs constructed by the state using a proprietary algorithm. Michigan State University had an existing relationship with the MDHHS and Medicaid and familiarity with the MDHHS warehouse data. The university partnered with the community and MDHHS to further identify and use population health metrics for monitoring health care and outcomes.
- Access was achieved through a data use agreement (DUA) between the MDHHS and the university. Using an "honest broker", acceptable to all parties, to secure and/or link identifiable data, the project evaluators only had access to de-identified data.
- DUA examples can be found through web searches. However, the data source/data holder often has their own DUA template that will be required. Consult with your own agency; they may have protocols for who can enter into a DUA agreement and other partners for development of the agreement.
- Access to county-level vital records, EPC risk and program data, and selected Medicaid claims data was central to have baseline data for health service utilization (e.g., adequacy of PNC, postpartum visits, ED visits, birth and pregnancy information /vital records) and allowed for longitudinal learning over time. Under additional agreements, we also linked census data, local federal Healthy Start program and agency specific medical records to the vital records, Medicaid claims, and EPC programs data for further outcome analysis specifically for each partner agency to assist with long-term decision-making. However, challenges with administrative data included lag times while waiting until data for a birth cohort was complete or data glitches in the warehouse. Such issues were not useful for real time tracking and monitoring to guide iterative improvement loops and decision making for quick course corrections.

Key Point:

Use mixed methods evaluation to inform strategies, monitor indicators, and understand perceptions of women and key stakeholders.

5.2 Use qualitative data.

- Given the complexity of the perinatal system of care, relying on quantitative data alone is not sufficient.
- Mixed methods should also be used to inform project activities.
- The demonstration county used several qualitative methods, including document reviews, case reviews, program data review, surveys (PNC providers), key informant interviews (PNC providers, EPC providers), and focus groups of African American women and of obstetricians.
- The results of all these methods informed the ongoing work.

In the demonstration county:

- Focus groups of African American women about their perceptions of the process of perinatal care Roman LA, Raffo JE, Dertz K, Agee B, Evans D, Penninga K, Pierce T, Robinson B, VanderMeulen, P. *Community Systems Improvement: Understanding Perspectives of Medicaid-insured Women on the Process of Perinatal Care*. Maternal Child Health Journal (2017) 21(Suppl 1): S81-S92.
- Physician survey of knowledge, utilization and value of EPC programs. Raffo, J. E., Gary, M., Forde, G. K., Meghea, C. I., & Roman, L. A. (2014). *Physician awareness of enhanced prenatal services for Medicaid-insured pregnant women.* Journal of Public Health Management and Practice, 20(2), 236-239.

Step 6: Identify Improvement Strategies.

Goals:

- Learn about the Chronic Care Model.
- Choose a model for your perinatal system of care.
- Learn about the strategies identified by the demonstration county.

6.1 Use the Chronic Care Model or identify another model to guide the design.

Identify a systems model to guide the design of the perinatal system of care and clarify and specify the scope of work that will be done. This is an especially important step with multiple stakeholders who need a common frame of reference for the work and prioritize what matters most. You cannot do everything!

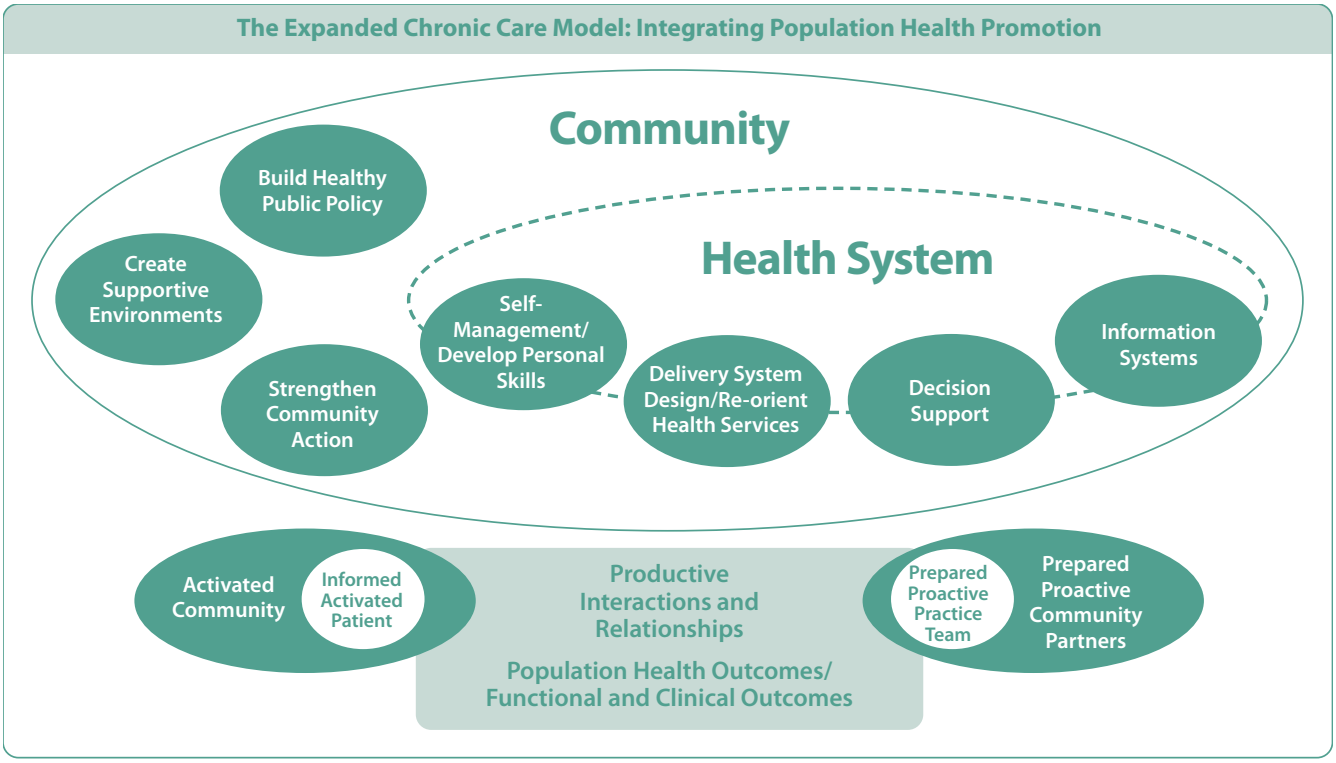
The model used in demonstration county:

The Expanded Chronic Care Model (CCM) was chosen to develop the perinatal system of care and the targets for the community collaborative work.

- The framework integrates population health and individual client care; recognizes the social determinants of health; acknowledges need for clinical and community care, and can be used by stakeholders across service sectors (Barr et al. , 2003).
- The CCM describes the importance of informed and activated women and self-management skills. It emphasizes the central role that women have in managing their own care and interventions that could increase personal skills.
- The CCM specifies that population health and functional and clinical outcomes are the result of productive interactions and relationships between an informed, activated patient and a prepared, proactive team and community partners.
- For our purposes, the inner circle labeled health system is defined broadly as community health systems, health systems/hospitals, the local health department, Federally Qualified Health Centers (FQHCs), community mental health, Medicaid health plans and other health agencies.

Key Point:

Identify a theoretical model and strategies that work best for your community's needs.



Reprinted with permission from Health Care Quarterly, LongwoodsTM Publishing Corp. Originally published in Barr VJ, Robinson S, Marin-Link B, Underhill L, Dotts A, Ravensdale D, Salivaras S. The Expanded Chronic Care Model: An Integration of Concepts and Strategies from Population Health Promotion and the Chronic Care Model. Hospital Quarterly. 2003;7(1): 73-82.

The table below describes each of the CCM components and how the community applied the concept. It is not inclusive of all community strategies, but provides examples as to how the model guided the work.

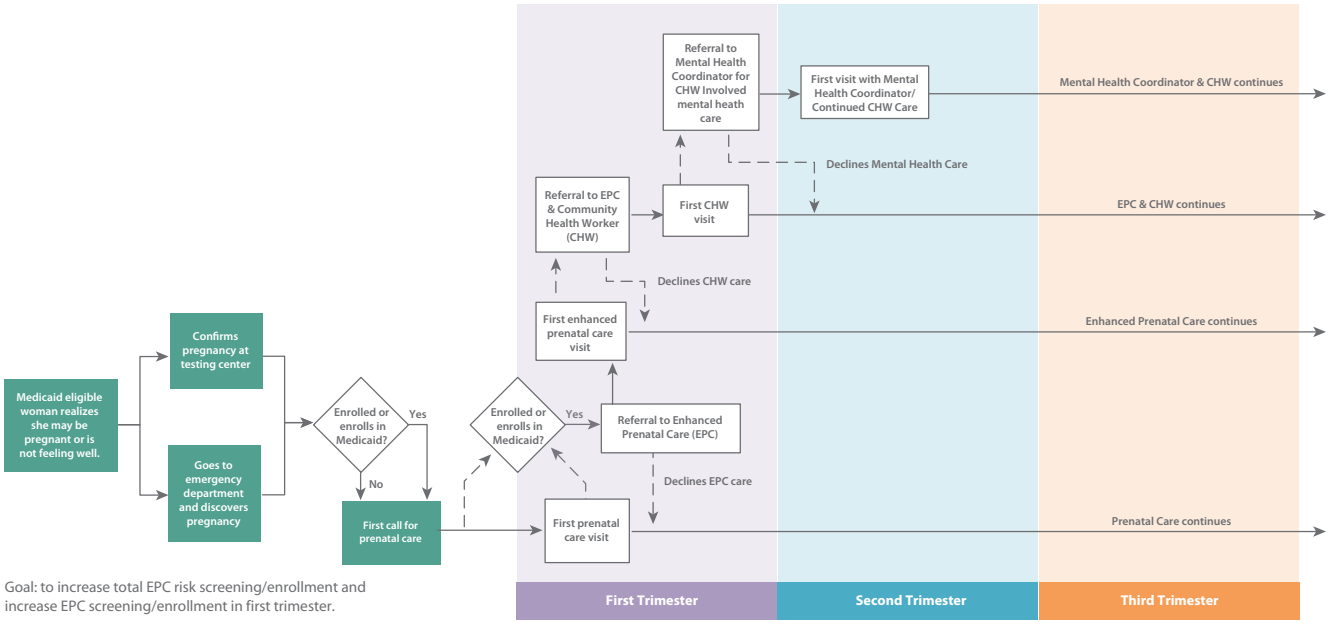
Summary of CCM framework components and examples of strategies.

CCM Components	Description	Strategies
Strengthen Community Action; Create Supportive Environments; and Build Healthy Public Policy.	Develop partnerships with providers, community organizations, and policy makers to set priorities and achieve goals that enhance health of community.	▪ Partner with community initiatives with similar goals. ▪ Establish an executive leadership group to support efforts and reduce barriers to change. ▪ Build cross agency "action teams" for core strategies. ▪ Convene evaluation/ research expert team.
Information Systems.	Create information systems to include community and medical data; identify and use population health metrics for monitoring health care and outcomes.	▪ Partner with the State Health Department and provide data analysis that informs community and policy. ▪ Use linked data sets to identify county baseline indicators and track over time. ▪ Connect community and health system-based providers through electronic medical records when possible; use mechanisms to communicate in health systems (e.g. dashboards).
Delivery-System Design.	Focus on collaborative care; increase care coordination, based on risk, to better support individuals and communities for health improvement. Reduce barriers and burdens to get risk-appropriate care.	▪ Develop clinical-community linkages/integration within prenatal practices serving a high volume of Medicaid-eligible pregnant women: standardize early identification and referral/engagement of eligible women in prenatal care to Enhanced Prenatal Care (EPC). ▪ Expand EPC plus CHW care & standardize early referral through EPC programs. ▪ Expand and standardize use of mental health coordinator services.
Self-Management Support.	Informed and activated women who are engaged and empowered to manage their own health and health care. Enhancement of personal skills and capacities for personal health and wellness.	▪ Enhance role of CHW with standardized content and protocols on goal setting, action planning, problem solving, and coaching/skill building to enhance women's communication with providers.
Decision Support.	Promotion of care consistent with scientific evidence and women's preference (e.g. provider practice guidelines, and patient decision aids).	▪ Identify and implement risk specific evidence-based interventions for EPC and CHW interventions. ▪ Utilize community decision trees to support provider and agency decisions for depression/mental health referrals (decision trees for community resources). ▪ Create and implementation use of Depression Decision Aid for Medicaid-insured women for use in EPC, Healthy Start, PNC to facilitate engagement in mental health treatment. ▪ Create and implement use of "transition to primary care: how to choose a primary care provider" interventions.

Barr VJ, Robinson S, Marin-Link B, Underhill L, Dotts A, Ravensdale D, Salivaras S. The Expanded Chronic Care Model: An Integration of Concepts and Strategies from Population Health Promotion and the Chronic Care Model. Hospital Quarterly. 2003;7(1): 73-82.

Summary of redesigned features in a detailed future map.

Process improvement methods include developing a future map of redesigned care that is done at the time of the improvement event. The future map is used to also guide the strategies chosen for improvement work. The figure below visually depicts how the actual redesign efforts could impact future care. The most noticeable change is service delivery on the pregnancy timeline: the efforts to seek to identify, risk screen and connect women to care and community resources early in pregnancy to avoid delays.



Goal: to increase total EPC risk screening/enrollment and increase EPC screening/enrollment in first trimester.

6.2 Implement community improvement strategies.

Strategies used in the demonstration county can provide some ideas about care improvement and help identify how common strategies were adapted for a variety of settings. Improvement strategies must be identified by the community stakeholders, customized to your community's particular needs and should maximize the resources available in your community.

Key Point

Implementation of community strategies across multiple community agencies is a challenging endeavor.

Step 7: Implement Improvement Strategies.

Goals:

- Learn about improvement strategies that were implemented in the demonstration county.
- Develop and implement improvement strategies for your own community.

7.1 Discover the demonstration county's delivery-system design strategies.

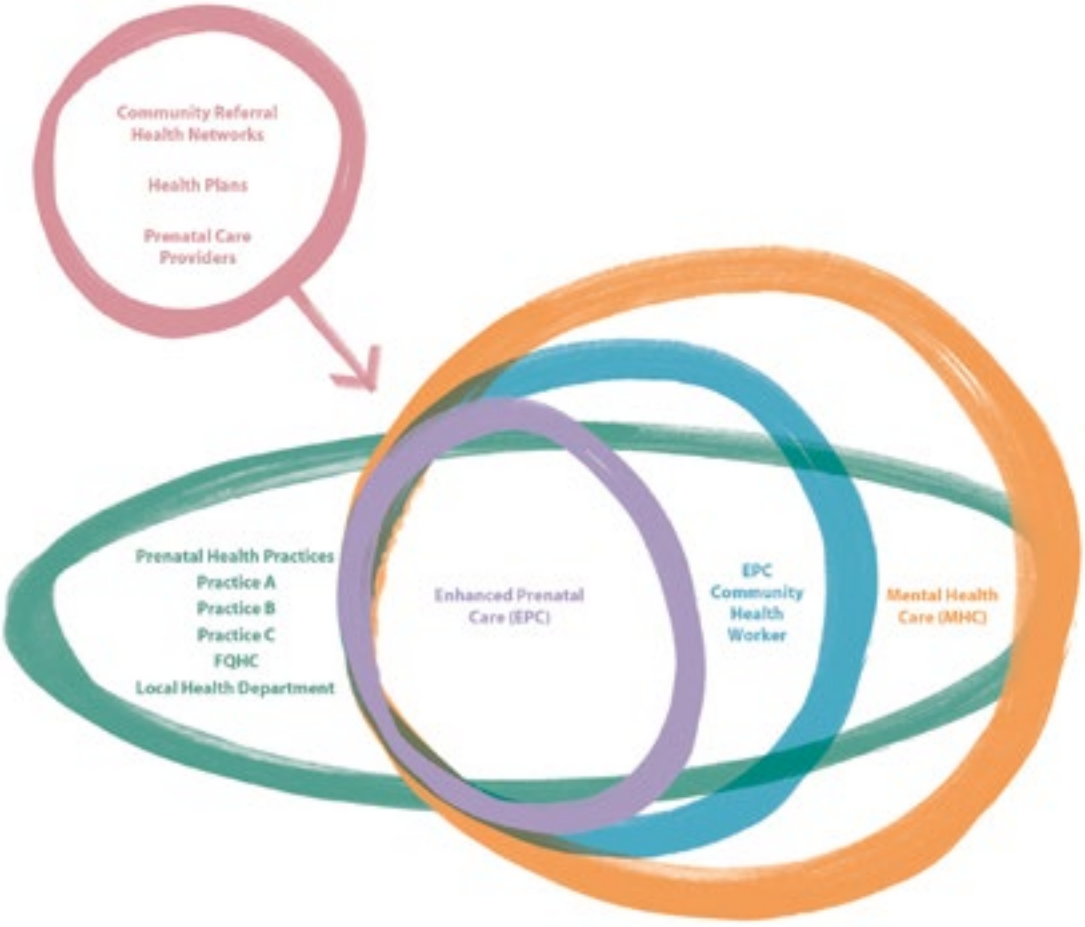
In the demonstration county, delivery system redesign strategies were developed to maximize existing resources, including:

1. The availability of EPC for all Medicaid-insured women in Michigan, including risk screening, care coordination, and evidence-based interventions, and the opportunity for clinical- community service linkages within high volume prenatal care practices.
2. An EPC-CHW team intervention model that delivers culturally appropriate interventions by CHW and a CHW-involved mental health collaborative care intervention for African American and Latina women through the local Healthy Start program.

The three primary strategies were:

1. EPC integrated systems approach/clinic-community linkage.
2. Expansion of EPC teams for African Americans and adaptation of the model to Latina women through HS program.
3. Expansion of mental health care coordinator for all EPC providers and increase the capacity for CHW-mental health therapist collaborative care for African American and Latina women through the Healthy Start program.

Our goal was to better integrate clinical and community care to improve services and outcomes. Below is a visual representation of how the components look/work together. However, the system of care is a dynamic model and will continue to be shaped by changes in agencies, community, health policy and funding influencers.



7.1.1 EPC integrated systems approach/clinic-community linkages: Three examples

Two high-volume Medicaid patient practices developed unique strategies to identify and connect eligible women to their own non-profit EPC program. Specific strategies were chosen based on practice needs and capabilities. The local health department also created direct referral strategies of eligible women among other services or resources they provided since they were not directly associated with a specific medical practice which provides prenatal care.

Although each agency varied in its implementation strategies to fit its setting, the major components of the EPC integrated systems/clinic-community linkages approach included:

- Early identification of Medicaid-eligible women at first contact with prenatal care or other community outreach and referral networks.
- Co-location of EPC staff in high volume clinic settings.
- Integration of EPC risk screening and assessment with clinic assessments to reduce redundancy.
- Standardized work for staff to connect women to EPC.
- Follow-up processes in clinic sites for women not engaged in EPC at first offer and supportive engagement.

Described here are examples of how the EPC strategy was operationalized in an FQHC prenatal clinic, a health system residency practice and high-risk prenatal clinic, and a local health department. Strategies were often revised and adapted to meet the demands of a rapidly changing health care environment. While we describe strategies within two clinics, in the period since the end of the project, four clinics have EPC linked programs.

Example A:
The "welcome visit" within a federally qualified health center (FQHC) System.

The FQHC strategy was to complete the EPC risk assessment early in pregnancy as part of "usual" clinic care, to test an "opt out" program strategy, and address redundancy in EPC and prenatal clinic comprehensive assessments. The FQHC has two clinic sites in the county that provides prenatal care for about 800 Medicaid-insured pregnant women per year (about 350 enrolled/year) and is also a non-profit EPC service provider. EPC services are co-located within the clinic sites. A process map (patient flow) of the "welcome visit" strategy is described and depicted below:

1. Either at a positive screen for pregnancy or a patient's first call to schedule prenatal care, staff determines an estimated time of weeks gestation. If the estimated weeks gestation is less than 28-30 weeks, a welcome visit is scheduled and presented as part of usual care within the FQHC. If the estimated weeks gestation is greater than 28–30 weeks, the first prenatal visit is scheduled.
2. The welcome visit precedes the first prenatal care visit. A patient meets with an EPC nurse or social worker staff to learn about: a) prenatal care (e.g. ultrasounds scheduled); b) community resources; and c) initiate EPC risk screening if a woman agrees (opt out approach). For the FQHC, about 90% of patients agree to EPC risk screening.
3. If the patient missed the welcome visit because she was greater than 28–30 weeks gestation, EPC services are offered to the patient and EPC risk screening is scheduled for another time. If the patient completed EPC risk screening, information from the EPC screener is used to help complete the medical assessment so questions are not duplicative.
4. The medical and EPC staff also conduct bi-weekly case conferencing to review and address all patient needs and concerns.

Diagram of Example A

Example B:

An Obstetrics and Gynecology Residency Practice: An on-site EPC master prepared social worker in the clinic and an automatic referral process to EPC services at first prenatal call.

The Obstetrics and Gynecology Residency Practice is in one of the largest health systems in the state. The health system delivers about 75% of the county Medicaid-insured population. The residency practice provides prenatal care to 800 pregnant women per year (about 350 new enrollees/year) and also houses a high-risk clinic with perinatology care. It is served by the health system's non-profit EPC program located at an off-campus site under a separate administrative structure. Due to the separate locations, different administration, and other complexities, the Obstetrics and Gynecology Residency Practice and EPC program went through a formal lean rapid cycle improvement event. Although physician leadership desires to co-locate the residency practice and EPC service within the same location, space within the practice is limited. One EPC social worker is housed within the clinic to support referrals, conduct risk assessments, and provide coordination of care between the two services.

The planning process led to a policy and protocol to automatically refer all patients to EPC at the first call for prenatal care. A description and depiction of the process is as follows:

1. At the patient's initial call, if the patient indicates she has Medicaid, intends to enroll in Medicaid, or is uninsured, the office staff member explains that they partner with EPC services as part of their prenatal care and the physicians recommend women receive EPC services. Scripts were created to help office staff with the conversation. After the first prenatal visit is scheduled, the office staff forwards the call to EPC staff. The medical staff also creates an electronic referral to EPC to document referred patients and communicate between the practice and EPC.
2. The first EPC visit can occur in the home or within the prenatal practice. If an EPC staff member was not available to take forwarded phone calls, staff follow-up with the patient based on information entered in the electronic referral system by the medical staff. However, the follow-up process was difficult and about 40% of pregnant patients eligible for EPC were engaged. Time spent following-up was also all unbillable time.
3. At the first prenatal visit, the co-located EPC staff member follows-up with women who scheduled EPC risk screening during their first prenatal visit in the practice and women who were unable to be reached by EPC to offer services (indicated in the electronic referral). If the patient was EPC risk screened during her first prenatal visit, the co-located EPC staff will transfer information between the EPC and medical risk assessment to reduce duplication.

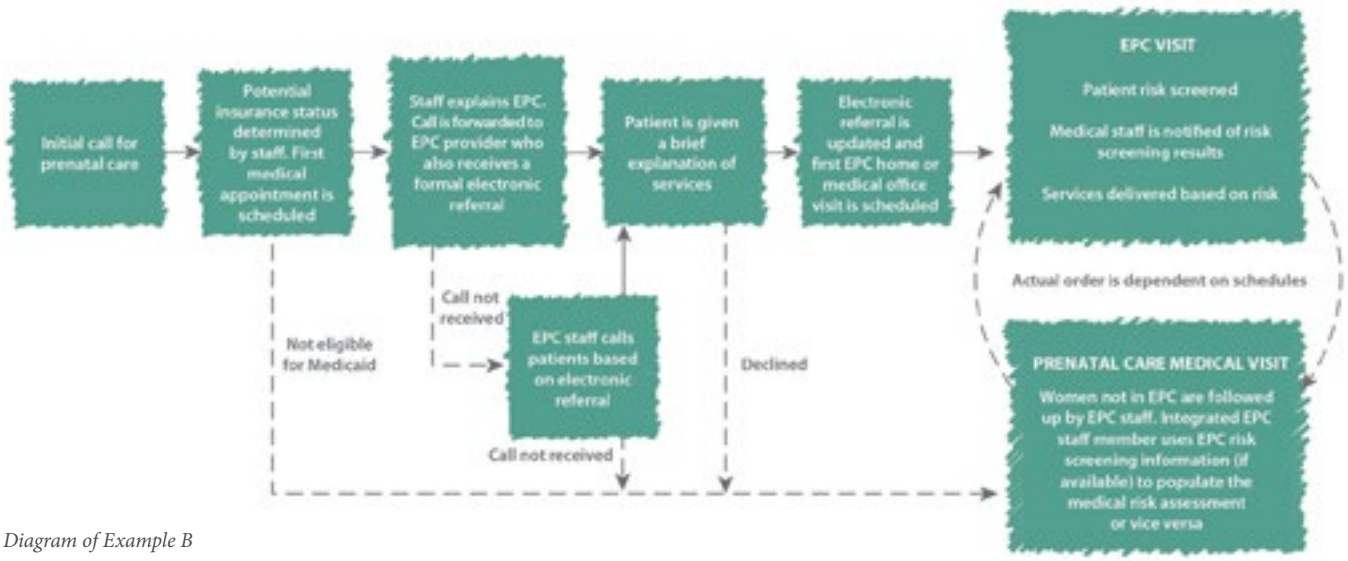


Diagram of Example B

Example C:
Automatic referrals to a health department EPC from other community resources and those provided within the local health department.

The local health department provides immunizations and Women, Infants, and Children program (WIC) services, tuberculosis (TB) clinic care, operates a Personal Health Services (PHS) clinic, and is a non-profit EPC provider. The health department's EPC program serves about 1,800 clients (about 600 new enrollees) per year. Because of the lack of a direct prenatal care link, the health department initiated automatic referrals to their EPC program from their WIC clinics and Medicaid outreach staff. Referrals from Medicaid outreach staff worked well until Medicaid outreach funding was directed to FQHCs with the state's expansion of Medicaid, which caused them to lose their outreach staff. The health department is currently working with the local Child Protective Services and has initiated a new linked referral and engagement process of eligible clients for EPC.

7.1.2 Expansion of community health worker- EPC teams focused on African Americans and adaptation of the model for Latina women through the community collaborative federal Healthy Start program.

CHWs are frontline public health workers who generally live in the community, have a close understanding of the community they serve, and are trusted members. They offer cultural translation, link to services, provide health education and can deliver tailored interventions to underserved women. CHWs provide relationship-based support and advocate for and empower women to get necessary resources to address social determinants of health.

Four of the non-profit EPC providers (two health systems, local health department, and Federally Qualified Health Center, FQHC) partner with the local HS program to deliver EPC-CHW team services to African American and Latina women. Evaluation of the EPC-CHW team services demonstrated reduced risk for preterm and very preterm birth over several years and improved service utilization for African American women. Implementation strategies included:

- Adapt the EPC-CHW team intervention for Latina women (the county has the highest percentage of Hispanic births in the state which doubled from 2009 to 2015, and infant mortality rates higher than the Caucasian rate).
- Increase the total number of CHWs and EPC-CHW teams for African American and Latina women.
- Standardize CHW interventions, align with EPC interventions delivered by nurse or social worker.
- Develop, implement and refine patient activation (e.g., primary care, patient-provider communication skill building) and self-management interventions (depression decision aid).
- Increase funding mechanisms to support CHW services.

With the increase of CHW staff, clearly defining the role of the CHW within the EPC team became vital for program staff. Clarifying roles, responsibilities and interventions was essential and served as a basis for electronic documentation of CHW contributions to care. Further, documentation allowed for quality improvement to address fidelity to the CHW-EPC team model, and will be used for evaluation, scaling-up of services and sustainability of program funding. Actions included the following:

- Development of a cross-agency workgroup which included EPC plus CHW program supervisors, CHWs, evaluator, and other program staff to detail the roles and responsibilities of the team.
- The workgroup identified core components of CHW care that were unique to and augmented the nurse or licensed social worker care coordinator services. A brief description is in the below table. Further, explanation of the defining work may be found in: Raffo JE, Lloyd C, Collier M, Slater L, Robinson B, Penninga K, Henning S, Coil J, Agee B, Quintion-Aranda V, VanderMeulen P, Roman LA. *Defining the Role of the Community Health Worker within a Federal Healthy Start Care Coordination Team.* Maternal Child Health Journal (2017) 21(Suppl 1): S93-S100.

Data collection, data monitoring, and quality improvement mechanisms also included:

- A redesigned CHW database to document CHW interventions, patient characteristics and other that can be used for evaluation purposes.
- Development and implementation of standardized monthly reporting of service delivery across multiple provider agencies
- Quality improvement activities included CHW time study, supervisor interviews accessing program facilitators and barriers, and creation of a breastfeeding engagement interview.
- Review and revision of the program policy manual to help support supervision.

The CHW-EPC team model (care coordination).

Discipline	EPC Nurse or Social Worker Care Coordinator.	Community Health Worker (CHW).
Area of Expertise	Clinical expertise and judgement for decision-making and client guidance.	Peer mentor expertise. Use experiential knowledge to build trust and engage women and their families in improving health and using health resources. Provide emotional support, information and advice, practical assistance, and help in understanding events or information. Serve as a role model.
Risk Screening	Conduct specific comprehensive EPC risk screening (inclusive of EPDS, Perceived Stress Scale, T-ACE Screening, and Personal Violence Screening). Monitor risks throughout care.	Using evidence-based tools, screen for personal mastery, trauma, health literacy. Continuous monitoring for depression/stress.
Health Education	Follow evidence-based plans of care defined by EPC for specific risks/risk-levels. Provide EPC-defined education as well as education within scope of practice (RN, SW).	With emphasis on client risk, provide specified comprehensive education that complements EPC education and work directly with client on developing self-management and problem solving skills based on risk through goal setting and peer support.
Referrals and System Navigation	Provide immediate referrals as needed; collaborate with CHW to ensure connections to all community services are made.	Provide as needed. Assist with engagement into services, accompanying clients to the referral source upon request, and help with more detailed referrals such as Section 8 housing. Support to follow medical appointment schedules, call medical office between visits for medical questions and encourage adherence to medical and behavioral treatment.
Collaboration on EPC/CHW	Lead care coordination efforts in collaboration with other disciplines as much as possible.	Collaborate with EPC care coordinator on all client care, notify care coordinator of any new risk or change in risk, case conference and partner on interventions as much as possible.
Outreach and Mobilization		Conduct outreach to recruit eligible clients. Inform and assist community members with accessing available resources and health services. Participate in health fairs that provide information about community services and promote health.

7.1.3 Expansion of mental health care coordinators for all EPC providers and increase the capacity for CHW-mental health therapist collaborative care for African American and Latina women through the Healthy Start program

Mental health care coordinator/consultant role.
The role of EPC provider, per the standardized Depression Plan of Care intervention, is to screen, educate about depression, and refer women for further assessment with a positive screen (Edinburgh Depression Scale). When a participant screens with moderate/severe depression symptoms, drug or alcohol use, or other mental health problems and refuses mental health care or fails to follow through on a referral or treatment, EPC providers have few resources to help their participants.

- EPC providers have limited access to mental health professionals and medical providers for consultation.
- Enhanced engagement interventions and strategies for EPC providers are needed to improve treatment participation.
- The referral response processes were not timely for women in crisis for women whose agreement to treatment was a fragile decision.

The following strategies were identified and implemented:

- Used lean strategy of process mapping the patient's journey from EPC provider risk screening to the primary mental health agency for pregnant women and mothers and addressed referral problems and timely care.
- Developed and implemented role of the mental health care coordinator/consultant role for EPC included:
  - » Education/training for EPC, prenatal and postpartum professionals, and others on engagement, treatment resources, decision referral trees for referring Medicaid-insured women. Scripted conversation educational aids for use at depression screening.
  - » Mental health provision of up to three shared clinic/home visits with prenatal EPC providers for women who screen at high risk to assess and support engagement in behavioral health treatment; accompaniment to treatment visits with the psychiatrist/behavioral health or other mental health specialists.
  - » Mental health provider assistance to EPC staff for clients in an emergency or crisis situation by providing consultation for referrals, supporting client until entered into a treatment facility, and arranging treatment for crisis or emergency situation upon request.
  - » Consultation for prenatal and EPC providers with treatment options, providers, and referral support.

Expansion of CHW-involved collaborative mental health care for African American and Latina women.
Building on a prior trial study of an EPC-CHW team model that demonstrated improvements in mental health for vulnerable women, the local Federal HS program partnered with a CMH agency to develop a CHW-involved collaborative mental health care model. Treatment includes individual screening, assessment and pre-treatment collaborative visits, in the home or outpatient setting, to successfully engage and maintain women in treatment. If a woman is not comfortable with individual counseling, she is invited to participate in HS therapeutic groups (depression, stress, anger management, grief and loss, and seasonal affective disorder).

More information about the CHW-involved collaborative mental health care model can be found in: Ellis E. and Vander Meulen P. A Holistic Approach to Engage African American Women in Substance Abuse and Mental Health Treatment. THESOURCE. 2010: 30.

The mental health coordinator role:

- Counsels women with CHW for repeated contacts to break down initial barriers to treatment, accompanies to first appointment, uses motivational interviewing, follows up in home if missed appointments.
- Provides crisis management and emergency or hospitalization support.
- Supports mental health care coordination with other providers (psychiatrists, medical).
- Gives individual counseling or supports engagement with other providers.
- Facilitates therapeutic support groups.
- Train HS staff and healthcare providers.

The CHW role:

- Incorporates cultural relevance and socio-cultural styles in all activities and interventions.
- Empowers women to set goals and plans to reach goals, in the context of an intensive relationship-based peer support.
- Promotes access and engagement to the mental health coordinator if HS participant is not ready to engage.
- Addresses basic health needs and stressors (e.g. transportation, food inadequacy, housing, health care) that limit participation.
- Provides supportive engagement and retention in the mental health services (group, individual).
- Encourages lifestyle behaviors that impact mental health (e.g. exercise, stress reduction).

7.2 Discover the demonstration county's patient self-management and decision support strategies

7.2.1 Empowering women for self-management and patient activation.

Improved delivery system redesign and processes are necessary, but not sufficient to improve population health. The CCM model specifies 1) the importance of patient self-management; the knowledge and skills to manage one's own health and health care; 2) decision support for patients and providers to making choices that support health.

Why is patient activation important?

Patient activation describes the knowledge, skills and confidence a person has to self-manage their personal health and wellness and health care.

- Activated patients make more effective use of health care resources, are more likely to have a regular source of care and receive preventive care, are less likely to delay getting care, more likely to ask questions in the medical encounter and seek out health information, and less likely to have been hospitalized or have used the Emergency Department (ED).
- Activated patients are more likely to engage in more positive health behaviors and less likely to smoke or have a high BMI, and have better clinical indicators when compared to other patients.
- Although effective patient-provider communication is associated with improved health, low-income women often struggle to communicate with providers (ask fewer questions, have difficulty understanding information and have limited health literacy skills to navigate a confusing health care system), factors also associated with health service utilization and health outcomes.

Community health workers (CHWs) and patient activation

CHWs often provide much of community-based outreach, engagement, activation, motivational support, and self-management for underserved populations.

- CHWs can increase patient activation, improve mastery, self-esteem, patient-physician relationships and prenatal communication, but CHWs are often underutilized.
- Focus groups with African American women about the process of care in the demonstration community revealed that many women had difficulty describing their health problems, lacked knowledge about their health, had difficulty communicating with providers, and did not understand their symptoms, consequences or treatments. Women felt as if they didn't get enough information from providers to understand, make choices, and feel as if they were in control.
- With the expansion of CHWs in service delivery in the demonstration county, strategies were used to strengthen interventions in two important areas: how women can be supported to more actively choose and better participate in their health care; and how a woman with a positive depression screening result or other mental health issues can make fully informed treatment decisions for herself.

7.2.2 Patient Activation and Decision Aid: interactive learning interventions for providers and patients.

Patient decision aids are a means of helping women make informed choices about health care that take into account their personal values and preferences. They are used to make it easier for women and their health care providers to discuss treatment options. Two interactive learning patient activation interventions were developed for use by CHWs or other home visiting providers with their clients. Booklets guide the interventions and were designed to more actively engage women in the material and strengthen problem solving and decision making skills. Clinical providers can use the booklets for more targeted follow up in the clinical setting. The booklets also have a curriculum materials for training to learn the interventions. For the curriculum on how to talk to your doctor, there is also a video of a patient encounter that can be used for training.

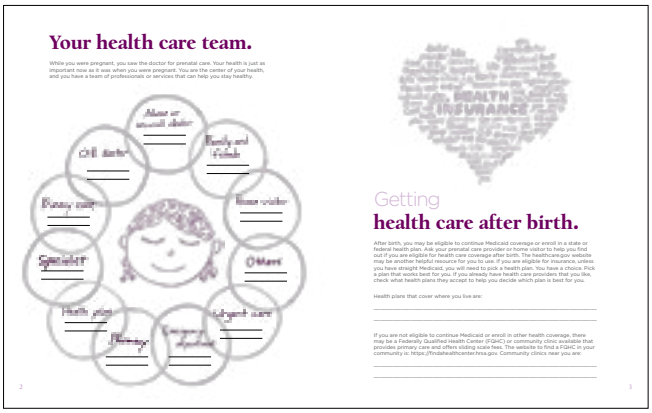
"Empower Yourself to be a Healthy Mom."

Empower Yourself to be a Healthy Mom is focused on getting and using primary care and other health resources and communication skill building for patient-provider communication.

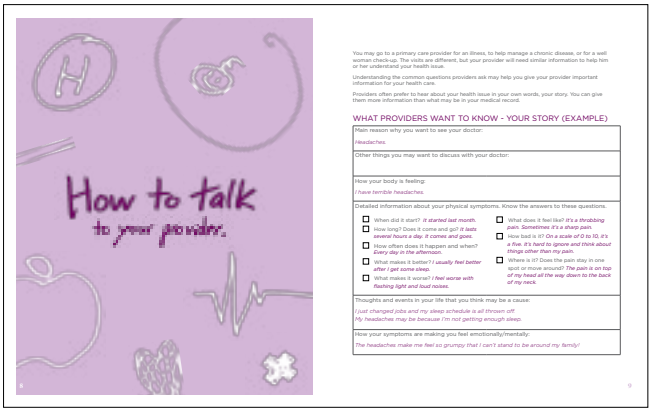
This booklet covers the following topics:

1. Getting health care.
2. Meeting a new provider.
3. Talking to your provider.
4. Making decisions about using primary care, urgent care and emergency care.

The Getting Health Care unit provides information on health insurance, understanding the concept of primary care and a primary care provider, choosing and evaluating a provider, and preparing to meet a new provider. Built into the information is an action or goal step for the provider to discuss with the client.



The How to Talk to Your Doctor unit addresses the confusion women often feel during the patient-provider encounter. It shares the typical questions that physicians routinely ask to discover and detail health problems and helps women learn how to anticipate questions and their answers and how to better present their illness story. It also encourages them to clarify and leave with enough information to have a follow up action plan. The intent is the CHW can guide preparation of provider visits and follow-up discussion of the action plan.



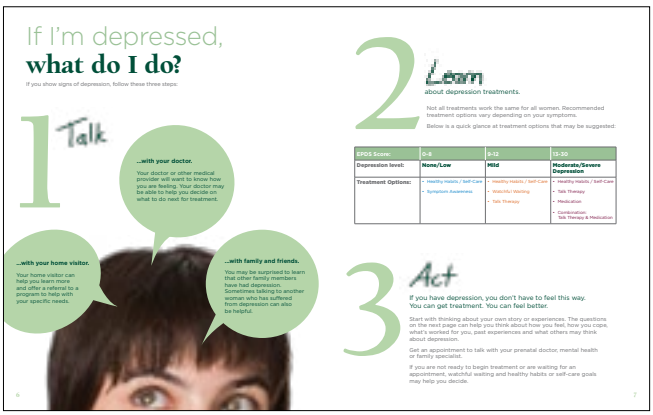
The Where Do You Go unit focuses on information about other medical care options when a primary care provider office is closed, including when to use urgent care or the emergency department. It also has the woman consider and choose options for care when the need arises.

"Perinatal Depression Decision Aid."

This booklet covers the following topics:

1. What is depression.
2. How to know if you are depressed.
3. What to do.
4. Share your experience.
5. Learn about treatment options.
6. Create an action plan.

This decision aid was developed to be used in the context of depression screening, often with an EPC or home visitor, with opportunities for follow-up conversations within the context of an ongoing relationship. It was designed to help women and their providers identify short term action steps, especially if a woman is unwilling to accept a referral for treatment.


If I'm depressed,
what do I do?

If you show signs of depression, follow these three steps:

1 Talk

...with your doctor.
Your doctor or other medical provider will want to know how you are feeling. Your doctor may be able to help you decide on what to do next for treatment.

...with your home visitor.
Your home visitor can help you learn more and offer a referral to a program to help with your specific needs.

...with family and friends.
You may be surprised to learn that other family members have had depression. Sometimes talking to another women who has suffered from depression can also be helpful.

2 Learn
about depression treatments.

Not all treatments work the same for all women. Recommended treatment options vary depending on your symptoms.

Below is a quick glance at treatment options that may be suggested:

EPDS Score:	0–8	9–12	13–30
Depression level:	None/Low	Mild	Moderate/Severe Depression
Treatment Options:	• Healthy Habits / Self-Care • Symptom Awareness	• Healthy Habits / Self-Care • Watchful Waiting • Talk Therapy	• Healthy Habits / Self-Care • Talk Therapy • Medication • Combination: Talk Therapy & Medication

3 Act

If you have depression, you don't have to feel this way. You can get treatment. You can feel better.

Start with thinking about your own story or experiences. The questions on the next page can help you think about how you feel, how you cope, what's worked for you, past experiences and what others may think about depression.

Get an appointment to talk with your prenatal doctor, mental health or family specialist.

If you are not ready to begin treatment or are waiting for an appointment, watchful waiting and healthy habits or self-care goals may help you decide.

6 7

The booklet also includes a Share Your Experience conversation grid that can guide providers in better understanding a woman's feelings and her perceptions of treatment, based on an engagement intervention strategy.


Share **your experience.**

When considering treatment options it's important to start with your story and your experience. Answer the following questions to help guide you. Talk about your answers with your home visitor or doctor at your next visit.

How have you been feeling?

What have you been doing to cope?

What just doesn't work?

How you find treatment?

Have you had any negative experiences?

What do others think – family and friends?

How you thought about the therapy or med?

What is your biggest worry about depression?

How do you perform your daily tasks?

8

Treatment Choice:
Healthy Habits (or Self-Care)

WHAT IS IT?

Healthy habits, or self-care, can help you cope with your feelings and compliment other treatments for depression. These include:

- Exercise
- Support groups
- Exposure to sunlight
- Meditation
- Journaling
- Spiritual life
- Healthy eating
- Doing something pleasurable every day
- Spending time with others who make you feel good
- Leaning on family and friends

HOW LONG DOES CARE LAST?

Healthy habits can benefit for a lifetime.

HOW WELL DOES IT WORK?

All healthy habits promote positive health, but regular exercise can be the most effective.

HOW LONG DOES IT TAKE TO FEEL BETTER?

It varies, but physical activity such as walking for at least 30 minutes a day should improve symptoms in 12 weeks.

HOW SAFE IS IT FOR ME AND MY BABY?

Check with you doctor to make sure exercise is safe for you.

WHERE DO I GO FOR CARE?

While you can do some on your own, your doctor, home visitor, friends and family may be able to support you with starting a healthy habit or help you get connected with a support group.

9

For women who may not be ready to accept a referral for treatment, there are two options for self-care /healthy habits (e.g. exercise) and symptom tracking (watchful waiting), in addition to talk therapy and medication.

Step 8: Learning and Improvement Cycles.

Goals:

- Learn about improvement cycles.
- Discover influences that required change in the demonstration county.

8.1 Monitor results and adjust to achieve impact.

The community improvement process described uses iterative feedback loops in which monitoring results of implementation leads to course corrections and further modification of strategies. Then another cycle of implementation and monitoring results is repeated until progress towards impact is achieved or the strategy is discontinued as untenable.

We have labeled these cycles as "learning and improvement cycles" as they are aligned with continuous improvement and innovation and are informed by new knowledge and best practices.

8.2 Reiterate step seven as outside influencers require change.

In community work, these cycles are significantly influenced by rapid changing health care delivery and the Medicaid policy environment for multiple partner agencies. Further, the instability of funding for EPC, HS and home visiting programs, programs that provide care coordination central to a system of care, influences strategy implementation and ability to achieve population impact.

In the demonstration county:

Our AHRQ goal was to track population indicators to assess for improvements, or lack thereof, and then revise strategies as needed. We report here findings of selected indicators across time and the resulting key lessons learned to inform the processes and strategies reported in the toolkit. It is important to note that the community made a major adjustment in the delivery of EPC services in the last several years of the project to focus on the care of African American and Latina women, who share a disproportionate burden of adverse maternal and infant health outcomes. As full implementation for Latina women occurred in 2015, reporting here is limited to African American women as a subgroup. Full details and research reports on selected outcomes and comparisons will be submitted for future publications.

Strategies for EPC early enrollment and engaging more women at high risk, including African American women and those with medical and social determinants and risk factors, are working. Although the county's overall EPC participation rates are higher than the state population, after a modest increase prior to the community's focus on disparities, they remain quite similar across time.

- First trimester enrollment into EPC increased within the county, 35% in 2009 to 49% in 2015, and was higher than Michigan's first trimester rates (34% in 2009 to 38% in 2015).
- The percentage of EPC enrolled women who screened at high risk significantly increased in the demonstration county for all women (32% to 38%) and for African American women (43% to 47%) compared to the statewide population of all women (38% to 39%) and African American women (42% to 41%).
- EPC enrolled more women in the demonstration county with medical risks (70% to 81%) including more African American women (75% to 85%) than the state (65% to 77% for all; 66% to 77% for African American women).
- EPC enrollment rates were higher for the county when compared to Michigan overall, but with limited improvement over time for all eligible Medicaid-insured women (33% county and 25% Michigan in 2009; 35% county and 28% Michigan in 2015). The percent of African American women engaged into EPC showed a modest increased, 45% in 2009 to 49% in 2015; for the state: 32% to 37%.

Improvements in EPC participation for African American women were particularly notable for women in the two large prenatal clinics who demonstrated the integrated EPC clinical approach.

- EPC enrollments within the two sites, Federally Qualified Health Center (FQHC) and health system, increased from 49% in 2009 to 68% in 2015.
- First trimester EPC enrollments also increased within the two sites, 32% in 2009 to 64% in 2015.
- The clinic-community sites also saw a significant increase in EPC enrollment of African American women, 58% in 2009 to 67% in 2015.

The addition of three private EPC provider groups did not necessarily increase capacity of EPC services within the county for the long term.

- In 2009, 33% of Medicaid-insured pregnant women enrolled in EPC within the county. This peaked at 39% in 2011, but leveled again in 2012 to 36% and remained at 35% in 2013 to 2015.
- An EPC policy change to increase EPC enrollment allowed for small private MIHP providers to apply for program certification and be reimbursed for EPC service delivery.
- The enrollment in EPC peaked with the addition of the three added private EPC providers in 2011. However, within a year, enrollment leveled to about the same rate as before the introduction of private providers in the county. The same number of clients served had shifted across all the providers causing loss in client numbers within the non-profit agencies.
- The client shift among EPC private providers resulted in at least one non-profit EPC agency to right-size its staff.
- More recently, the private EPC providers have either closed or moved out of the county. Thus, available capacity for EPC is now decreased with the loss of the private providers and loss of non-profit staff.

EPC enrollment swings by agencies were remarkable over the period of time driven by policy changes and costs and funding resources.

- One EPC program doubled enrollments (200–422) over a one-year period after integration with a prenatal clinic.
- Once the community agreed to increase the EPC-CHW enrollment for African American and Latina pregnant women through the HS program, the HS enrollment rose from 76 clients in the year when they temporarily lost HRSA funding to over 200 clients the next year. The program then jumped to 400 enrollments the following year, with an influx of new resources for Latina care from a foundation. These increases were dependent on EPC care coordinators and CHW staffing from the three non-profit EPC providers. Scale up efforts, while positive, are challenging.

EPC and EPC-CHW (Healthy Start) programs are fragile as Medicaid reimbursement for EPC programming does not cover full program cost and HS funding is annual renewable. With the investment in reaching the highest risk women, resources were not available to increase EPC capacity overall.

- Non-profit EPC agencies such as health systems, FQHC and local health departments invest up to half of EPC program costs from additional funding sources. We anticipated risk screening costs would be covered by EPC reimbursement, and therefore many no/low risk women would be screened requiring no additional interventions. Only about 10% of women screened are low risk (40% are high risk). Because of this, it was difficult for non-profit programs to increase capacity beyond the regular funding support.
  - » Typically EPC program reimbursement, which only covers face-to-face completed visits, for the health system, FQHC, and health department was approximately 45% of the total cost of services. The range of total costs of services was between $750,000 to over $1 million/agency.
  - » The health department and FQHC used Medicaid cost-based reimbursement, Title V, wraparound funding and other sources to offset the costs; the health system used Community Benefits funds.
- Private EPC programs do not have additional funding support and are dependent on reimbursement for completed visits. They are often dependent on low/moderate risk clients who are invested in the program and have limited resources to serve women who are harder to reach and serve.
- Because EPC programs are fragile, communities are also more likely to invest more effort in supporting other programs with greater financial reimbursement and stability. For example, one EPC program worked to increase enrollment in their Nurse Family Partnership program for first-time, young mothers as the financing covers more of the program costs.
- Funding for specific home visiting programs such as federal Healthy Start are grant funded, with yearly re-application.

Measuring mental health service utilization for improvements was problematic given community strategies for funding mental health services that were not evident in Medicaid claims billing.

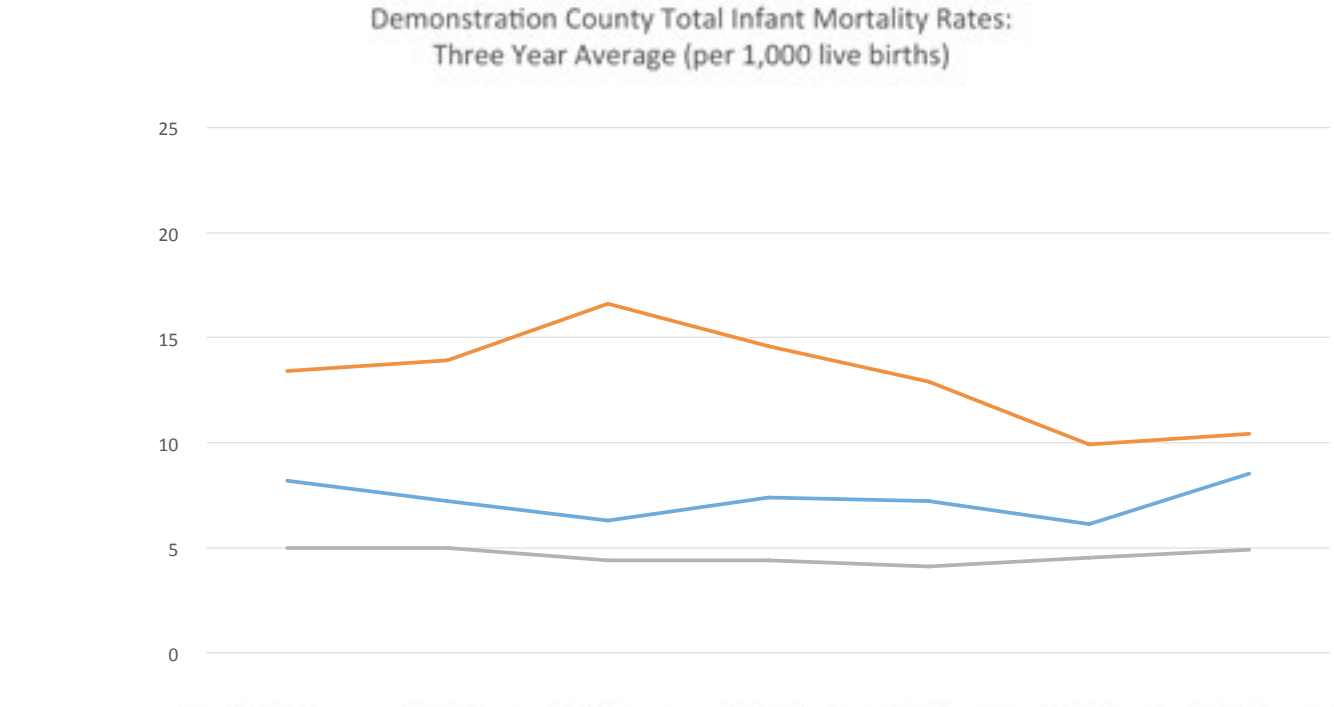
- We had access to mental health claims as an indicator of a completed referral and for mental health services; however, Healthy Start provides and funds selected mental health services that are not billed in traditional ways. For example, about 40–50 women participate in therapeutic groups, especially useful for women who are not ready for individual counseling, without individual billable services.
- Reimbursement rates vary for Medicaid and Community Mental Health (CMH), with CMH reimbursement higher. The primary community mental health provider for pregnant women and new mothers typically seeks reimbursement through CMH first before billing Medicaid.
- Therefore, in tracking Medicaid claims billing, the demonstration county billings show decreases in service utilization, especially for African American women, that do not align with program records of treatment participation. Until CMH billing becomes available through new data use agreements, we cannot accurately measure this outcome for effectiveness.
- The community is exploring how Medicaid outpatient reimbursement and new models of Cognitive Behavioral Therapy (CBT) integrated into EPC could be used to increase acceptability and capacity for mental health treatment.

Efforts to improve maternal health care were mixed, with a bright spot for postpartum care.

- Postpartum visit rates were higher for the county compared to Michigan overall rates (60% in 2009 to 69% in 2015 in the county vs. 55% in 2009 to 59% in 2015 in the state) and demonstrated improvement over time.
- There was a significant improvement for African American women in postpartum visit rates (64% in 2009 to 80% in 2015 in the county vs. 52% in 2009 to 60% in 2015 in the state).
- There were no differences in the adequacy of prenatal care (Kotelchuck) in the community or in any comparisons with the state and this was true for African American women.
- Prenatal and postpartum ED use increased in the demonstration county, in the state and in comparison counties. Prenatal ED use was lower for county (41%) than for the state population (49%) for all women; and for African American women (62%) vs. the state population rate (68%).

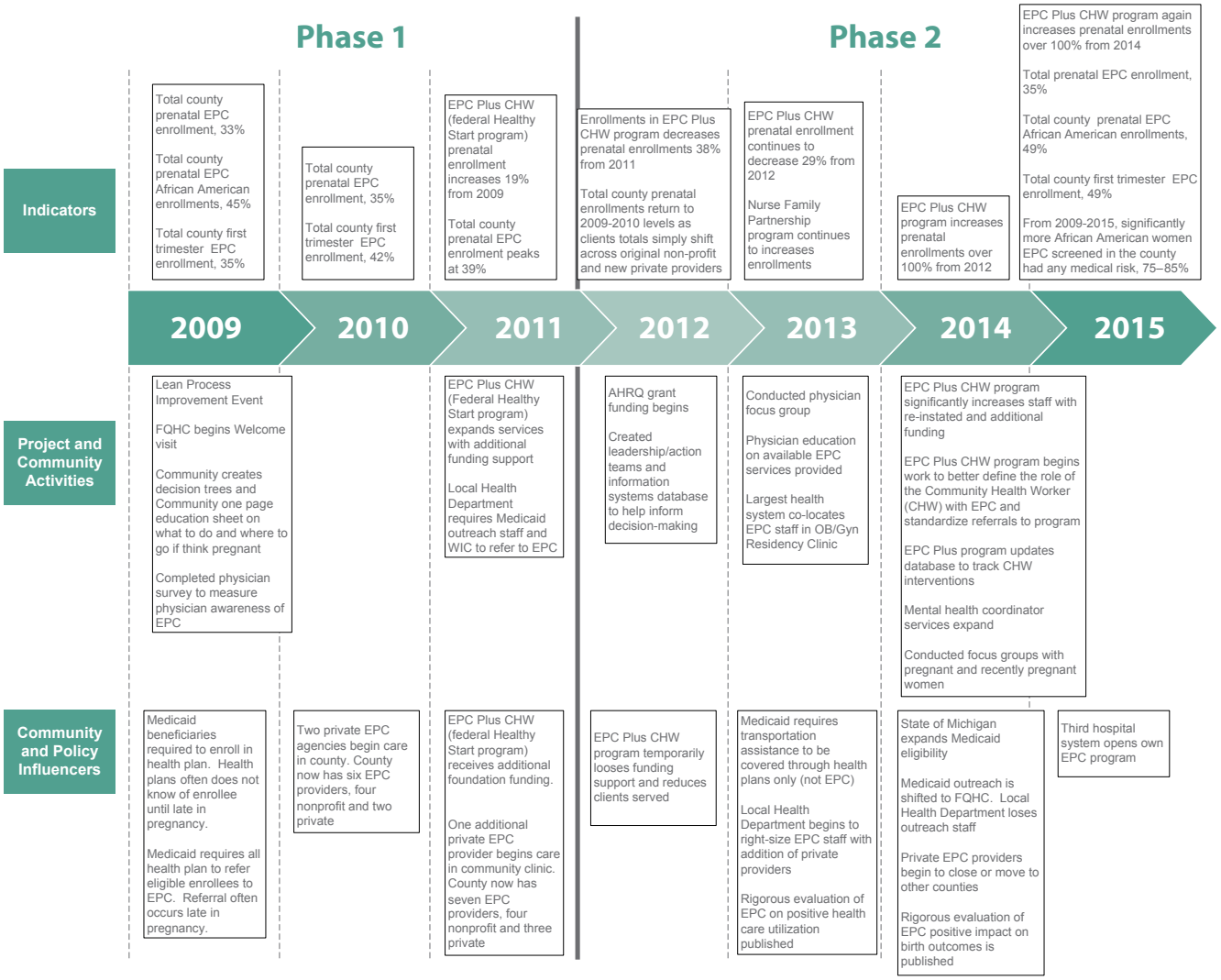
Tracking maternal and infant health outcomes.
The long-term goal of community improvement efforts is to impact maternal and infant health. We tracked preterm birth, low birthweight, short interpregnancy interval, and infant respiratory disease in the first year of life as an infant health indicator. The difficulty of impacting health outcomes in meaningful ways is apparent.

- There were minimal changes in short interpregnancy interval levels across time (16% to 17%) at the community and state level for all women and for African American women.
- Preterm birth increased across time for both the state (9% to 12%) and the community (8.3% to 11%) for all women, and for African American women in the state (12% to 16%) and the community (12% to 14%).
- Both the state (7% to 8%) and the community (6% to 8%) showed a slight increase in low birthweight infants across time, and there were similar increases for African American women, for the state (11% to 12%) and the community (10% to 11%).
- Although we did not have access to infant death data, we show the state vital record report for infant mortality across the time period 2009–2015; with important improvements shown for infant mortality for African American infants (13.4 to 10.4). This table also highlights the infant mortality for Latina women and why the community sought to expand the HS program.



	2007-09	2008-10	2009-11	2010-12	2011-13	2012-14	2013-15
Hispanic	8.2	7.2	6.3	7.4	7.2	6.1	8.5
African American	13.4	13.9	16.6	14.6	12.9	9.9	10.4
White	5	5	4.4	4.4	4.1	4.5	4.9

The power of external forces, rapidly changing health policy and health care environments, made for challenges in implementation of strategies. The table below depicts changes across time and some of the environmental influencers.



Phase 1: Post community process mapping, baseline measurement, each agency exploring ways to improve services, EPC certifying private providers to expand enrollment.

Phase 2: AHRQ funding support for community infrastructure, data, etc. transition to expanding EPC-CHW services to target African American and Latina women.

Overall lessons learned.

- Reframing the process of perinatal care from the perspective of women's journey to acquire resources for health was central to the development and implementation of a system of care. Women's preferences for care and desire to take an active role in their health and health care shaped strategies.
- Disparities in pregnancy-related maternal health morbidities and mortality are gaining needed attention. EPC programs care for a high proportion of Medicaid-insured women with medically complicated pregnancies, often comorbid with psychosocial problems. The community success in increasing early EPC enrollment of women at risk, especially African American and Latina women, while positive, challenged existing staffing and program resources.
  - » There is a need to reexamine delivery of care coordination for women with complex health and social problems; more efficient, less costly mechanisms to supplement home visits (e.g., telehealth care coordination) could be used with innovative funding mechanisms.
- Although the project had some success in linking EPC and prenatal care providers through an EMR within a large health system and the FQHC, connecting external EPC and local public health providers to prenatal care providers was not accomplished. Depending on paper-based communication in busy clinics limited partnering for coordinated care.
- A community system of care is dynamic; there is the need for flexibility with new population information and rapidly changing fiscal resources. This was the case for the community's move to focus resources on enrollment of African American and Latina women at greater risk for adverse outcomes With growing increase and concern regarding the disparity in maternal health (morbidity and morbidity) this shift was important.
- Change is complicated across community health care settings and must be tailored to individual settings. The collaborative work also stimulated other agency changes in care but are unmeasured as positive outcomes (e.g., Centering Pregnancy program initiation).
- Challenges in program scale-up (and in some cases, scale-down) and costs for frontline agencies and providers to change and serve the highest risk women were underestimated. Major program transformation takes a toll on front line providers who deal with pressing client needs on a daily basis and have uncertainty about the stability of their funding and their program.
- The System of Care community infrastructure, especially the executive advisory group and physician champion partners, was critical to any achievements. Leadership at high levels, in each agency, can keep things moving forward.
- With expansion of CHW team models with EPC and with mental health providers, there is increased need for professional supervision and support as the CHWs serve high risk women and may face secondary traumatization themselves. Standardizing interventions and processes improved CHW implementation of services (increases in home visits, documentation to measure fidelity to the model).
- Timely measurement, linking of multiple data sources, and sharing information across sectors to drive improvement and course correction were difficult to accomplish. There are time lags in availability of data and administrative data requires extensive data preparation.
- Securing long term sustainable funding was a priority to stabilize programming to reach highest risk women and infants.

KEY POINT:

Implementation, in recurring learning cycles, is both exciting and exhausting. In systems work, with few models for guidance, more risk taking is needed and learning from success and failure in real-time. Moving population health indicators in a short period of time, like the AHRQ time period, is difficult. A longer-term window is needed to fully evaluate impact.

Step 9: Plan for Sustainability.

Goals:

- Learn how to utilize resources to sustainability fund your care model.

9.1 Create a long term, innovative financing model.

Communities and providers are dependent on community-based, EPC and home visiting programs to augment prenatal care and address health disparities. Yet the demonstration illuminated the challenge for EPC programs to serve the highest risk women with unstable funding sources, dependent on significant community agency investment.

While expansion of the Healthy Start EPC-CHW model of services and focus on African American and Latina women was made possible through generous, time-limited, philanthropy of the W.K. Kellogg Foundation, in-kind resources from partner agencies, and HRSA Federal Healthy Start funds; long term, innovative financing models are needed to stabilize continuation of services. Further, with the end of the demonstration project, which included project management and evaluation support, transitioning project functions to continue community improvement was warranted. We describe here one strategy that community used to address this issue.

KEY POINT:

Unstable funding takes a toll on community agencies and frontline providers; new funding strategies are needed.

Pay-For-Success: a social impact funding model.

Given the focus to expand the Healthy Start EPC–CHW service model, demonstration of the effectiveness of the model was critical to the process to exploring new funding mechanisms. To document birth outcomes over time, we conducted retrospective, propensity matched studies of African American women who had received Healthy Start services (Latina women were primarily enrolled in 2015 cohort). Significant reduction of risk for preterm and very preterm births were consistently demonstrated for African American women. The findings positioned the community partners to submit an application to the state of Michigan for a Pay-For-Success contract.

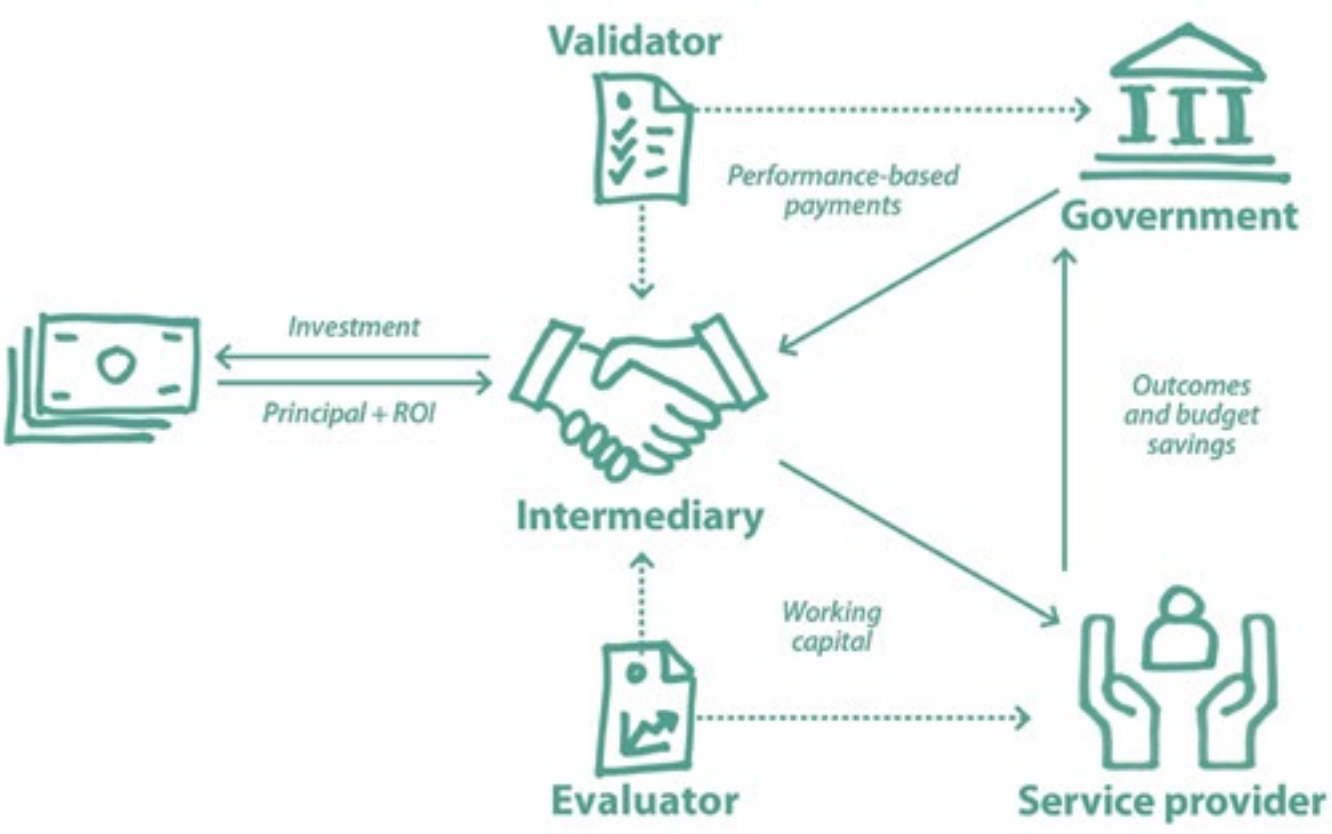
The basic premise of Pay-For-Success is to bring new capital sources to the table for nonprofit service providers with repayment based on defined outcome metrics that link to public savings. Further, the goal is to transfer financial risk from government and taxpayers to the private sector investors, while creating a return on investment for impact investors in the case of success.

A social impact funding strategy partners, governments, private investors, health systems and providers to fund and deliver effective services and achieve predetermined health outcomes. If outcomes are achieved, savings repay investors and fund continued services. Evidence of the effectiveness of this approach is still limited, but early projects suggest that substantially greater progress could be made in alleviating many of our most serious and complex

social problems if nonprofits, governments, businesses, and the public were brought together around a common agenda to create collective impact.

The State of Michigan was awarded a technical assistance grant from the Harvard Government Performance Lab to assist in developing a Pay-For-Success project in Michigan and the demonstration county's federal Healthy Start program was chosen. In the fall of 2016, the program entered into a Pay-For-Success contract with the state of Michigan and Medicaid. A pilot study of scale-up of the Healthy Start EPC–CHW model was conducted. Investors were secured who provide resources to supplement existing federal HS resources and community in-kind EPC contributions for a five-year demonstration.

If annual cohorts of women are shown to reduce risk of preterm births when compared with appropriate comparison groups, Medicaid will return resources back to investors based on pre-specified dollar amounts. Two outcomes measures were selected for payment: 1) preterm birth and, 2) rapid repeat pregnancy. Although the payments will be limited to the two payment outcomes, additional funds have been allocated to a comprehensive evaluation of other outcomes of importance for program improvement. The first cohort of women were enrolled in 2017.



Resources to learn more about Pay-For-Success financing model:

- Harvard Government Performance Lab: *https://govlab.hks.harvard.edu/social-impact-bond-lab*
- Non-Profit Finance Fund: *https://govlab.hks.harvard.edu/social-impact-bond-lab*
- South Caroline Nurse Family Partnership: *http://www.payforsuccess.org/project/south-carolina-nurse-family-partnership*

Community system improvement.

The community collaboration to seek, secure, and implement the Strong Beginnings/Healthy Start Partners for Success project demonstrates the community's investment in continuing improvement activities to reach population impact. Any continuing AHRQ project activities will be transferred to the Healthy Start Pay-For-Success project structure whose goals and strategies align with the AHRQ demonstration and whose primary partners were also the AHRQ partners. As a Federal Healthy Start project, local Healthy Start partners are focused on achieving collective impact and increasing accountability through quality improvement, performance monitoring, and evaluation. Collective impact initiatives involve a centralized infrastructure, a dedicated staff, and a structured process that leads to a common agenda, shared measurement, continuous communication, and mutually reinforcing activities among all participants.

Pay-For-Success projects also have funded evaluators and validators who use the same large, linked vital records and administrative data, therefore, the community on-going data structure can remain in place and be extended in the next five years to continue to monitor improvements or revisions. The Pay-For-Success project also has support for quality improvement work across the primary EPC agencies.

Further information about federal Healthy Start may be found at:

https://mchb.hrsa.gov/maternal-child-health-initiatives/healthy-start

http://healthystartepic.org/hear-from-your-peers/collective-impact-pln/

State of Michigan regional system of care.

The State of Michigan, as part of its infant mortality initiative, will implement a statewide coordinated perinatal system using a regional model, and follow the recommendations and guidelines developed by Michigan's perinatal providers in *Perinatal Regionalization: Implications for Michigan (2009)*. Full document found at *http://www.michigan.gov/mdch/0,4612,7-132-2942-216919--,00.html.* The State is now engaging stakeholders to establish Regional Systems of Care and has assigned communities to particular regions. The demonstration community is located in the state Region 4 (northwest Michigan). Below are examples of Region 4 System of Care work that is being done to address EPC enrollment and substance use.

- The Home Visitation Workgroup conducted a root cause analysis that examined contributing factors that impede robust participation in home visitation programing. The workgroup decided to focus their initial quality improvement project on improving the home visitation referral system through an educational toolkit for community referral sources. This initial quality improvement project will focus efforts on EPC referrals and resulting caseloads, specifically within two identified counties.
- Substance use during the perinatal period is an important factor in infant mortality rates in Region 4. However, not enough women are receiving substance use screening, referral, and treatment during the perinatal period. The first step toward decreasing substance use is to increase the number of women who are screened. The collaborative goal for FY18: by August 31, 2018, two pilot sites will increase substance use screening of women during the prenatal period for alcohol, prescription, and illicit drugs using the five Ps screening tool from 0% to 75%.

- The quality improvement project, Plan-Do-Study-Act project, will be developed. The substance abuse workgroup identified several reasons why women use substances during the perinatal period and focused on provider screening. Providers do not always screen for substance abuse risk or substance abuse disorder, because they hold risk bias, do not know what to screen for, and/or where to refer patients who screen positive. The workgroup will target their quality improvement project on universal screening with a standardized tool and will have two pilot sites use the five Ps screening tool with their patients.

Michigan Maternal Infant Health & Equity Improvement (MIHEIP)

The Michigan Maternal Infant Health & Equity Improvement Plan builds on the existing momentum of the Infant Mortality Reduction Plan (IMRP) to improve the health of moms and babies in Michigan. The Improvement Plan recognizes the disparities that contribute to poor maternal and infant health outcomes and promotes health equity as a priority. It is innovative in its efforts to tailor interventions and bring clinical and community partners together to save lives.

The vision of the Improvement Plan is:
***Zero** preventable deaths. **Zero** disparities.*

Town Hall meetings were held in five sites in the state and reports for each site, and additional information about the Improvement Plan is available at *https://www.michigan.gov/infantmortality/0,5312,7-306-88846---,00.html*

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