NATIONAL ASSOCIATION OF
Community Health Centers®

IMPROVING QUALITY FOR POSTPARTUM CARE

IMPLEMENTATION GUIDE

ACKNOWLEDGMENTS

HOW TO USE THIS GUIDE

This guide can empower HCCNs and high-performing health center staff to leverage data from electronic clinical data systems (ECDS) to support the continuum of women's health care. This essential work will improve family planning, prenatal care, transition to primary care, and postpartum care to reduce maternal mortality.

WHO IS THIS GUIDE FOR?

This guide will help your team of health center Maternal Health Clinical Champions. This includes a **C-suite leader, physicians, nurses, medical assistants, care coordinators, behavioral health providers, or patient navigators**. It helps to have a **patient representative** (maybe a board member or patient advocate) engaged. Include members from the informatics/EHR/IT staff including **data analysts and population health SMEs**, and **business and operations professionals** from finance, the front desk, and clinic managers. The team must aim to understand patient experiences and common barriers.

WHAT THIS GUIDE OFFERS

The **Action Steps** outlined in this guide are designed to:

(1) Improve data completeness to reduce maternal mortality

(2) Improve patient care based on evidence-informed guidelines

(3) Enact systems-change for quality improvement, not only for patients but also for clinical leaders and family medicine staff at health centers

The key to quality Maternal Health is complete data for informed care.

ACTIONS TO IMPROVE PREGNANCY AND POSTPARTUM CARE

Understand People and Processes to Build Your Business Case

- Gather data and build patient stories. Learn barriers and opportunities for maternal health throughout the continuum of care
- Create a multidisciplinary team of Maternal Health Champions
- Review policies and procedures to identify improvement strategies
- Build your business case and inspire leaders to invest

Establish Goals for Care Transitions and Select Measures for Continuous Quality Improvement

- Choose evidence-based measures (in phases)
- Lessons learned from NACHC's pilot testing
- Use NACHC's guide to selecting measures

Identify Gaps in Data Collection and Care

- Conduct quality assurance to identify when and where comprehensive care data gaps exist in your EHR (Data Dictionaries and Value Sets help)
- Develop a system to integrate lost data during care transitions
- Create linkages to improve EHR data with partnerships
- Consider EHR reminders and alerts for care teams to ensure quality data and follow-up

Implement Solutions to Share Data

- Consider best practices when setting goals, such as building or deploying the pregnancy episode in the HER and partnering with area hospitals for data sharing
- Use the AIM bundle on postpartum discharge transition to implement Maternal Mortality Review Committee (MMRC) prevention recommendations

Set up Systems for Data Collection and Use

- Partner with care teams to build a useful data dashboards with reminders about care measures
- Use a human-centered design approach to develop workflows and dataflows
- Build express lane elements and SmartSheets for streamlined data collection

Train Staff to Collect and Use Data

- Train staff on why, what, and when data is critical to collect and use for maternal health
- Educate patients about maternal care upgrades at your health center, and when follow up care is important (share the Hear Her Campaign's 15 warning signs)

Evaluate and Report Results: Quality Improvement (Clinical, Quality, Data, and Informatics Leaders to C-Suite)

- Create a culture for continuous quality improvement, using a human-centered design approach.
- Leverage improvements in clinical outcomes, patient and provider satisfaction, equity, and cost (the Quintuple Aim) in marketing materials and with funders.
- Evaluate and Report Results: Quality Improvement (Clinical, Quality, Data and Informatics Leaders to C-Suite)

Maternal Health Champion Legend: These Actions are For YOU

C-Suite: CEO, with input from CFO, CMO, CMIO, CIO

Clinical Team: Multiple clinician decision-makers (i.e. OB/Gyn., Pediatrics, Family Practice, etc.). One leader acts as **Project Director** with support from senior clinical leadership (CMO or a Medical Director). Care team members doing care coordination, patient navigation, and obstetric services like midwifery and doula care should also be included.

Informatics/Quality Improvement Team: Could overlap with Clinical staff if you have informatics experts in the area —this person might act as Project Director or be an IT expert on EHR use.

Data Analysts/EHR Leaders: May overlap with or be part of the Informatics Team. This person's job is to extract data for the success of the project.

Training Staff: May overlap with EHR staff. Responsible for training to help team members learn and review important workflow components and process updates.

WHAT COMMUNITY HEALTH CENTERS CAN DO FOR MATERNAL CARE

Health centers can systematically improve the infrastructure available for data to inform comprehensive maternal care through pregnancy and postpartum.

Around the country, Community Health Centers serve 1 in 7 people from racial, ethnic, and minority groups; and 1 in 3 people in poverty who often experience a range of high-risk conditions. Health centers can and generally do play a critical role in addressing care gaps for these individuals.

When health center care teams understand local care gaps for pregnant persons, they can develop stronger and more sustainable data systems and partnerships to overcome the limited care coordination of prenatal and postpartum follow-up that currently exists. This guide is designed to help identify and address data gaps for higher quality and more comprehensive maternal health care.

WHY IS IT IMPERATIVE FOR HEALTH CENTERS TO IMPROVE DATA-COLLECTION FOR MATERNAL HEALTH?

Maternal death rates in the U.S. are more than three times greater than other high-income countries. While places like Norway, the Netherlands, Germany, Iceland, Japan, Israel, and Poland document less than 4 women dying from maternal complications (Maternal Mortality Rate by Country 2024 (worldpopulationreview.com), in the U.S., 1,205 women died from maternal complications in 2021. This is unacceptable.

We also see severe disparities in the U.S. that have led to worse outcomes for pregnant persons.
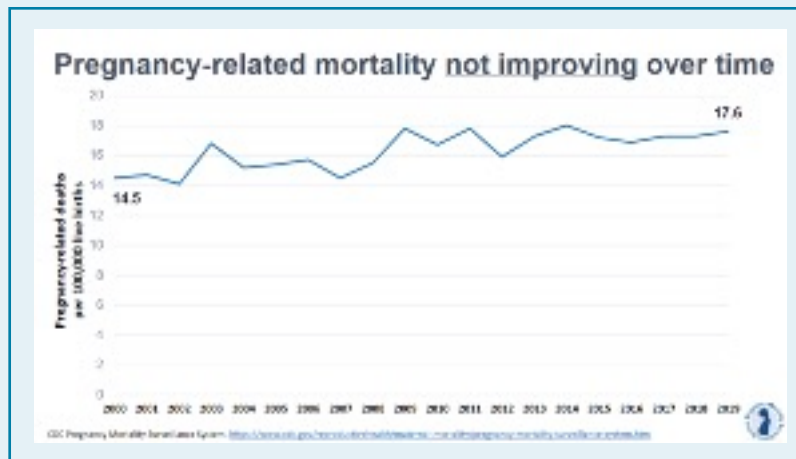
We've learned that more than half (53%) of the pregnancy-related deaths in the U.S. occurred within 7 days to 1 year after giving birth. The women most impacted are rural residents and those who identify as Black, American Indian, Alaska Native, Native Hawaiian, or Pacific Islander.

2019 data tells us:

- 22% of deaths occurred during pregnancy
- 13% of deaths occurred on the day of delivery
- 12% of deaths occurred within a week of the end of pregnancy
- 23% occurred 7 to 42 days after the end of pregnancy
- 30% of deaths occurred 43 days to 1 year after the end of pregnancy
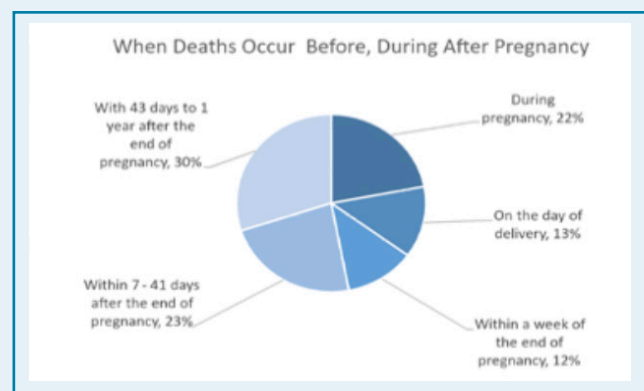
The Maternal Mortality Review Committee (MMRC) believes four in 5 pregnancy-related deaths in the U.S. are preventable | CDC Online Newsroom | CDC. This is because the most frequent underlying causes of pregnancy-related deaths are **mental health conditions**. Yet, different populations experience different complications. For African American persons, **cardiac and coronary conditions** most frequently lead to death; while for Asian persons, it's **hemorrhage**.

Health disparities can be traced to **gaps in healthcare throughout pregnancy and the postpartum period**, where the U.S. healthcare system fails to meet health and social needs.

Chronic stress, challenges with Medicaid coverage and redetermination, and other **social drivers of health must be addressed**. Yet, tracking patient care is lost when data systems are not integrated or aligned between health centers and local hospitals or OBGYN providers that deliver babies.

Critical metadata on pregnancy status and pregnancy outcomes are not standardized across electronic health records (EHRs) in the U.S., despite its importance in evaluating risk and identifying appropriate screening, treatment, and follow-up needs.

In this guide, we'll uncover a few immediate solutions to integrate data and improve patient care.
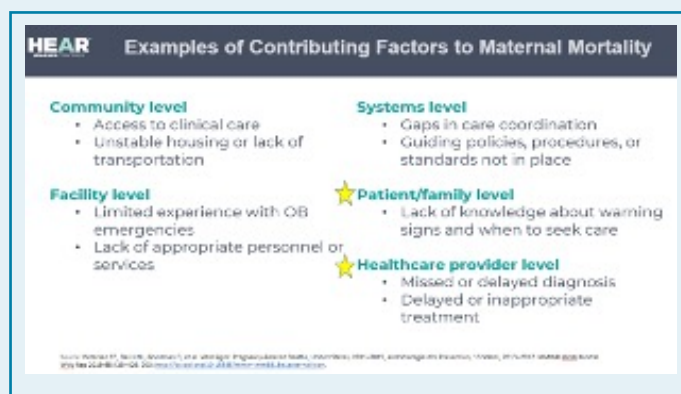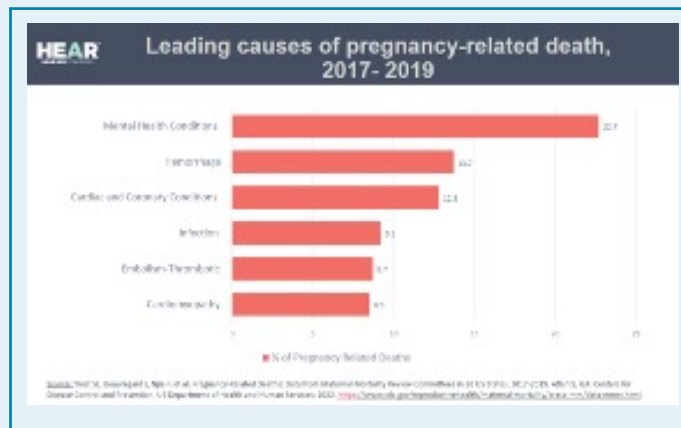
CDC's Hear Her Campaign educates providers and patients about the 15 urgent maternal warning signs and symptoms during pregnancy and the year after. It encourages women to seek care immediately if they experience any of these signs, and encourages providers to listen, stay aware of, and treat these life-threatening conditions.

We highly recommend these resources: https://www.cdc.gov/hearher/index.html
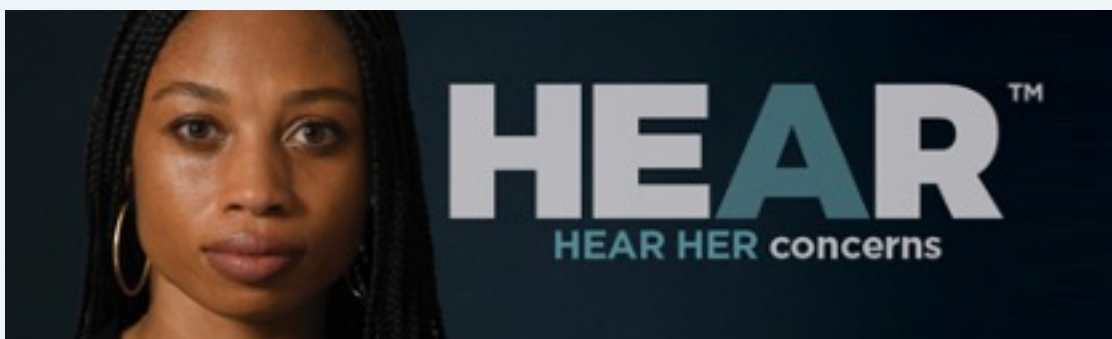
ACTIONS
TO IMPROVE PREGNANCY AND POSTPARTUM CARE

ACTION 1
Understand People and Processes to Build Your Business Case

Build The Story

A successful improvement initiative starts with understanding the people who need care and the processes of delivering care. When gaps in care are identified, it's essential to gain buy-in from the leadership at your organization to initiate solutions.

Start by telling your health center leaders stories about patients in pregnancy and postpartum periods and the care they receive in your community. Consider

- How many of your patients experience pregnancy annually?
- What proportion of pregnancies are documented through the actual (not estimated) delivery date, and what is the proportion of outcomes unknown?
- How does your health center currently track this information? Is there a process to track and act on this information routinely?
- What negative pregnancy-related outcomes could have been prevented or addressed differently?
- How can the care team save time, increase revenue with value-based care arrangements and billing practices, and have a better work experience while providing exceptional care to parents pre- and postpartum?
- How are transitions of care approached (consider OB patients into and out of the hospital for delivery, preterm labor, and emergencies)?
- How can each member of the administration and care team obtain data about pregnant and postpartum women in my health center?

Developing programs that support parents and babies can aid in retaining and recruiting patients to your clinic.

Delivery Dates by Race/Ethnicity at NACHC's Health Center Pilot Sites: 117,000 deliveries documented

- 63% of deliveries were patients who identified as Hispanic or Latino.
- 15% of deliveries were patients who identified as Black or African American.
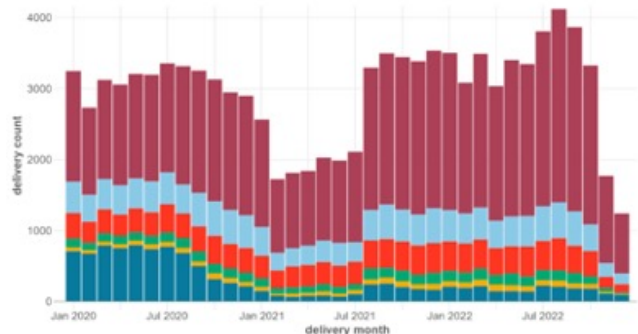
Create or task a multidisciplinary team

- Create or task a multidisciplinary team internally to lead this quality improvement work. The team should be led by a Maternal Health Clinical Champion who understands care team members and patient challenges.

- Clinical champions may be physicians, nurses, medical assistants, care coordinators, behavioral health leaders or patient navigators and should reflect multiple roles on the care team.
  - Include patient representation: possibly board members or patient advocates. If this is not possible, learn about patient experiences and common barriers with a focus group or survey. If you can, engage this group repeatedly to understand whether the proposed solutions are helping.
  - Individuals from the informatics/EHR/IT team including data analysts and population health SMEs.
  - Business and operations professionals from finance, the front desk, and clinic managers.
  - Determine a plan to answer questions
- Encourage participants to share new ideas and suggest opportunities for innovation.
- Make sure someone is responsible for quality assurance: data extraction and validation, testers for EHR interface changes, and updating staff training and practices.
- Schedule regular meetings with this team to share improvements, address challenges, and learn from one another to inform future activities.

Develop Personas

Gather data and stories about the kinds of patients seen by your organization before, during, and after their pregnancy to understand the range of needs and challenges. Consider building a few patient personas, like Casey's, to sample your high-priority populations and show how patients are served. Personas should include information about cultural backgrounds, insurance status, and unmet social needs that may impact access to care. Include demographics and insights from care teams and patients.

Personas are used to compel leaders to invest time and resources into an issue. They can set the stage for workflow and dataflow adjustments or reorient staff to how quality improvements are working. Personas could be a composite of clinic patients who have experienced barriers to care.

Patient Persona: Casey

18Y G1P0 with gestational diabetes (GDM). She has a long-standing history of marijuana use.

Casey is a senior in high school and is planning to go to the local junior college. She has a job at Arby's and has one supportive parent. With no family history of diabetes, she was surprised by the diagnosis. Her boyfriend is not involved with the pregnancy.

Casey has been generally compliant with her care, getting twice weekly NST and doing daily walks for exercise. One week, she does not show up for her NST.

At first, she was diet-controlled, but by 34 weeks was on insulin. She has continued to use marijuana but is considering quitting in the 3rd trimester because she is motivated by decreasing her chance of CPS involvement after delivery.

At 40 weeks, she had a planned induction which failed, and she had a C section for non-reassuring fetal heart tones. Her surgery was unremarkable, and she had a routine postpartum course with a normal fasting glucose on POD 1. She decided against breastfeeding. Was discharged on POD#3 to home. She wants to wait to have an IUD at her 6 weeks postpartum visit.

At her 1-week PO visit her c section scar was well healed. She had minimal bleeding. She was a bit concerned because she had checked her blood sugar at home and had a fasting of 130. Her baby had its 1 week appointment and is doing well.

Review Policies and Procedures

Review and evaluate pregnancy-related care activities for health center patients, both at the health center and outside the health center (at commonly used local hospitals or providers).

- Gather and review all Policies and Practices (P&P) or Standard Operating Procedures (SOP) at your health center
- Perform Direct Observation (Appendix 1) of the clinic during a typical workday
- Create workflow diagrams to:
  - Show the patient's movement through a pregnancy episode (from identifying the pregnancy through prenatal care, delivery, and one year postpartum)
  - Show the patient's movement through the clinic during a typical postpartum visit
  - Document support for the patient outside of typical visits (care coordination)
  - Document efficiencies (or inefficiencies) in the staff workflow before, during, and after patient encounters
- Create a dataflow diagram, documenting who captures important information about the pregnancy, where it is stored, and how it is used

CHECKLIST FOR COMPREHENSIVE POSTPARTUM QI IMPROVEMENT

Look closely at the programs, staff, and financial status of the health center pregnancy program. Ask care teams, leaders, and revenue teams to suggest where gaps or opportunities exist.

○ *Is the comprehensive postpartum visit easy to view and complete in the EHR? Is the postpartum visit documented, coded, and billed by all providers?*

- **ACOG Guidance on Comprehensive Postpartum Visit:** https://www.acog.org/clinical/clinical-guidance/committee-opinion/articles/2018/05/optimizing-postpartum-care
  - ACOG recommends a comprehensive postpartum visit within 12 weeks of pregnancy. All patients should have an encounter with the obstetric care team within no more than three weeks, but for some high-risk patients, a follow-up interval closer to 3-5 days may be ideal.
  - Elements required for coding a comprehensive postpartum visit: https://www.acog.org/practice-management/coding/coding-library/coding-for-postpartum-services-the-4th-trimester
- **Screening for Social Drivers of Health (SDOH).** The comprehensive postpartum visit should include a complete assessment of physical, social, and psychological well-being, including the following domains:

○ *Are complications and social needs being documented? Can these be billed for as part of pregnancy-related visits?*

- Mood and emotional well-being including postpartum depression screening and conversation around sleep and fatigue.
- Infant care and feeding, including lactation assessment and support services.
- Sexuality, contraception, and birth spacing, including contraceptive counseling.
- Physical recovery from birth, including follow-up of any obstetric complications or new symptoms that have not improved or presented since birth.
- Relevant health maintenance, including recommended vaccinations and vitals-checks.
- For patients with chronic conditions, hypertensive disorders, obesity, diabetes, thyroid disorders, renal disease, and other behavioral health conditions, additional assessment and monitoring is warranted at this visit as to the long-term management approach and care teams.
- To screen patients for Social Drivers of Health (SDOH)– use the PRAPARE Toolkit: https://prapare.org/prapare-toolkit/
- CMS guidance on use of Z-codes to capture SDOH needs: https://www.cms.gov/files/document/cms-2023-omh-z-code-resource.pdf
- Guidance on Medicaid Payments for Health-Related Social Needs: https://www.chcs.org/testing-one-two-three-cms-new-demonstration-opportunity-to-address-health-related-social-needs/

Referral process

○ *Is a firm referral process in place with a specialist who can co-manage and track referrals for patients?*

Value-based care and new payment models

○ *Is there an opportunity to receive value-based care payments for managed care with your largest payers interested in comprehensive prenatal and postpartum care?*

- Many payment programs offer new opportunities for social needs assessments and counseling.
- Community Health Workers and Doulas can be paid to strengthen partnerships and provide opportunities for research dollars.
- Care management for high-risk populations in pregnancy can be paid under value-based payment for patients experiencing intimate partner violence, patients with active substance abuse, and patients who are unhoused or food insecure.

Build a Business Case for Health Center Leaders

Use the data you've collected on SDOH, data-collection gaps, workflow opportunities, policies and procedures to explain how your health center can make changes to address some of the most obvious barriers to the continuum of pregnancy care. Your leadership should know that a stronger and more integrated data infrastructure for postpartum services would lead to more timely and comprehensive care, which in turn, attracts new patients to your center.

Make your case for new clinical decision supports to help women during and after pregnancy, address patient care gaps, and reduce preventable deaths. Local hospitals and providers can become collaborative partners in your health center's efforts to reduce maternal mortality rates and streamline care activities.

Don't move forward beyond this point without ensuring you have a champion in the organization's leadership. Buy-in from the C-suite is necessary to invest in both big and small quality improvement changes. Their involvement can also break down roadblocks and scale solutions.

INFORMATICS
SOLUTION: Build a Data-Driven Business Case

- Start by understanding **how women experience pregnancy** within your community, including how they get care and where care gaps exist. **Engage leaders in a topic of interest to them,** to show how restructuring postpartum data collection and deployment is essential right now.
- Build your team of champions for quality improvements. **Encourage collaboration** to define baseline data, implementation steps, and what defines success. Consider operational components like scheduling and messaging patients, billing and revenue, external referrals, and coordination and training. Collaboration makes data pulls more meaningful and ultimately yields better results.
- **Use specific postpartum data to build your case and improvement plan.** Defining the postpartum visit can be challenging, but we CAN easily define the postpartum population. Use your EHR data and community data to show leadership who you treat.
- Structure initial improvements to **close identified care gaps** but remain flexible. Recognize that implementation plans can be adjusted along the way. It is common to go back and create new builds as new information comes to light.
- **Feature informatics investments** that can reduce maternal mortality and improve care. Improved data for quality care will lead to increases in revenue.
- Plan to **streamline multiple improvements** for the best outcomes. For example, if providers are not billing for components of postpartum care, you may add support for providers to include these items in bills. This could include reminders to schedule follow-up appointments which will increase revenue and can save lives.
- **Take the time to build consensus.** If a health center or network is planning to use one tool at multiple sites to consolidate maternal health information, the first step is to foster group consensus around one build so all partners are providing input. This is more efficient than customizing multiple builds. Coordination saves time and money.

ACTION 2
Establish Goals for Care Transitions and Select Measures for Continuous Quality Improvement

Choose Evidence-Based Measures: Lessons Learned from NACHC's Case Study

NACHC worked with the CDC, California Maternal Quality Care Collaborative, and the American College of Obstetricians and Gynecologists (ACOG) over several years to perform an environmental scan of quality measures and improve postpartum care and outcomes. This process, funded by a grant, led NACHC to identify, modify, create, and test outpatient perinatal and postpartum measures to target health center patients at risk.

For this process, NACHC used a human-centered design to identify key care activities needed to capture key measure denominators and numerators. With a human-centered design approach, the process changed to address staff concerns and workflow patterns. For example, the measure period for contraceptive counseling was extended during the prenatal period to accommodate existing workflows in the clinic.

Measures Tested at Health Centers

The phases below show the most helpful measures tested during NACHC's pilot period (2018-2023). This work can be done in a phased process for a smoother transition into high-quality postpartum care:

PHASE 1

- Comprehensive Postpartum Visit (within 8 and 12 weeks)
- Postpartum contraceptive counseling and provision
- Diabetes screening for women with GDM-affected pregnancies · Postpartum depression and anxiety screening, referral and treatment

PHASE 2

- Postpartum depression and anxiety screening, referral and treatment
- Cardiovascular care (hypertensive disorders of pregnancy) composite and individual measures
- Substance use disorder screening, referral, and treatment

PHASE 3

- Anemia screening, referral, and treatment
- Lactation assessment and support

Specific prenatal and postpartum outcomes cannot be tracked without complete data around pregnancy outcomes. Identifying pregnancy episodes, pregnancy-related metadata, pregnancy, and infant outcomes are not consistently supported in typical EHR products.

It is also important to track health disparities and health equity outcomes in your data dashboard. Race and ethnicity will be available in any system, but if there are specific populations you prioritize, such as refugee populations, patients with disabilities, patients with language barriers and health-related social needs, it is necessary to look at the process to capture this data and its quality and completeness (if possible). A high-

quality set of health equity data elements will allow the team to be mindful of disparities in each patient population.

Generally, the **configuration of data elements and data capture in the EHR must be created for dashboards** by the health center's IT or coding team. It's helpful for the IT team to get input from the care team members using this data to ensure the dashboards are useful. Training is often necessary to generate consistent and complete data.

What did we learn?

NACHC learned existing validated electronic quality measures were not available for most of the measures identified by NACHC's partners. The team used existing evidence-based guidelines to then build measure definitions and test them with real health center data.

In some cases, the team expanded the measure to gain additional data, and then refined populations or executed a specific care activity. For example, the **postpartum contraception measure** included the capture of data on the claims documentation of contraceptive counseling and data from the patient-facing assessment about pregnancy intention and self-identified needs for contraception (SINC). Care teams would capture, share, and potentially track patients who identified a need, but the need was not met. By expanding our definition of these preferences and documentation, the health centers could evaluate how often contraceptive counseling was documented locally, and systematically document the patient's preferences around contraception. Asking care team members to be part of this human-centered design approach led to measure additions like these.

After the initial measure selection and pilot was complete, NACHC's health center partners used **similar methods to identify new measure areas for postpartum depression, cardiovascular care, and substance use**. These measures were selected based on feasibility and their importance in postpartum morbidity and mortality. In general, it is important to be able to add additional data that can be filtered for easy reporting and benchmarking.

Building Sustainability

A measurement and quality improvement plan could be used to apply for funds. Ongoing baseline support beyond a start-up grant will be needed for system upgrades, updated terminology, clinical guidelines adjustments, new measures as part of federal programs or value-based care arrangements, plus staff, workflow improvements, or data flow changes.

With coding improvements, you can enhance billing for new staff services around patient health, social screening, and treatment. Patient navigators and claims around other non-billable provider visits can create revenue for technical support activities. Ask the CFO to track changes over time so the leadership is financially engaged in the success of this work.

Early gains from low-burden fixes (like order sets and documentation templates) may show early value and encourage the C-Suite to spread and scale the work done. Consider presenting successes at professional meetings and in papers so you can gain attention for this life-saving work.

INFORMATICS
SOLUTION—Guide to Selecting Measures

Quality Improvement (QI) is only successful when we know how we're doing and can identify ways to do better. Getting a good baseline approach to data quality and a valid set of initial measures is essential to improving systems, workflows, and care activities.

Incorporate visualization in a data dashboard and decision support in the EHR for the measures you choose to assist care team members.

See Action 3 to get timely notification when a pregnancy ends in delivery so the health center can quickly follow up with postpartum care.

Quality Improvement Plans to Enhance Data-Driven Decision-Making

- Start by integrating evidence-based recommendations for comprehensive care into the clinic's workflow for women in the pregnancy continuum.
- Use Health Information Technology (HIT) systems to standardize the data and measures you select to achieve evidence-based recommendations
- Your quality improvement plan can incorporate workflow improvements and dataflow improvements for complete data about women during the pregnancy episode in the electronic health record (EHR).

ACTION 3
Identify Gaps in Data Collection and Care

Care transitions are fraught with care gaps and data gaps.

Obstetrician patients, at a minimum, transition into and out of the hospital for delivery. Data between hospitals and health centers are lost during these transitions, so health center care teams do not know when a birth occurred, or data is incomplete for prenatal, intrapartum, and postpartum care. Health centers may not have clear information about complications including preexisting and pregnancy-induced health conditions.

It is important to develop a robust system for data integration, training, and continuous quality improvement aimed at closing data gaps and care gaps. This starts by choosing measures for continuous quality improvement that identify and address health disparities. While many measures exist, there are several that should be clarified to address barriers to care.

EHR Data Gaps

While electronic health records (EHRs) are required to support data collection and exchange and are assumed to support pregnancy care, there are typically gaps in the way EHR data informs care teams about comprehensive care and population health functions. (Many organizations have in-house or third-party data warehouses for population health functions.)

The quality assurance team should conduct an initial analysis of:

- Pregnancy episodes and outcomes
- Data element completeness
- Measure-results chosen to drive comprehensive maternal healthcare

Initial data gaps identified during this phase will drive the data solutions later.

In 2022, the Office of the National Coordinator for Health IT (ONC), added a **requirement for EHRs to support pregnancy status** including-documented transitions of care. However, the pregnancy status element is only documented at individual points in time. It does not include the metadata needed to understand the patient's progress. It also doesn't provide context for pregnancy, health, and life experiences.

Despite federal requirements and large volumes of data, many outpatient care providers do not get electronic documentation of the **actual delivery** date (not a required federally standardized data element). This prevents timely follow-up and accurate calculation of quality metrics. The lack of standardized definitions for high-risk patients prevents action to address potential complications and understand patient risks.

Admission, discharge, and transfer (ADT) data may flow from other organizations to yours with dates and other information about transitions of care. Your data team may be able to automate the import of ADT data into the EHR using existing or new connections **to Quality Health Information Networks (QHINs)** and outside organizations like local hospital partners.

ADT data must be reintegrated into your health center's core data warehouse, and in most cases, feed back to the EHR interface, so health center care teams can truly improve care.

> **Possible partners to close EHR data gaps include area hospitals, OBGYN providers, health information exchanges (HIEs), QHINs, and your partner Health Center Controlled Network (HCCN).**

Linkages to Improve EHR Data for Care Teams

Linkages in the EHR can bring together all encounters and activities across the pregnancy episode. The timeframe:

- Retroactively begin with the last menstrual period (LMP)
- Record the identification of pregnancy
- Close the pregnancy episode with the actual delivery date
- The postpartum episode begins at the delivery date and extends up to 1 year after the delivery date.

Back-end data queries can trigger follow-up actions for patients who have missed recommended care activities. The end of the pregnancy episode can be expected within 2 weeks of the estimated delivery date.

Staff can start with these assumptions to track patients, with or without access to external data (even if a patient does not resurface during the postpartum period). The EHR can trigger a record for staff to enter the actual delivery date to close the episode. Similarly, at the end of the postpartum period, triggers should alert missed follow-up actions. Ideally, a formal transfer back to primary care management can complete the episode.

Documenting the pregnancy outcome can be done using the **pregnancy outcomes value set** (Appendix 2) or more specific diagnosis codes grouped into the header value set. This will allow an organization to see the entire cohort of patients with pregnancy, their dates, and their outcomes.

INFORMATICS SOLUTION 1: Closing Data Gaps for Postpartum Care Improvements

- Your quality assurance team should conduct an initial analysis of the data collected in the EHR throughout a pregnancy episode to identify data gaps.
- If possible, partner with area hospitals, OBGYN providers, health information exchanges (HIEs), and your Health Center Controlled Network (HCCN) to identify external ADT data that can be shared with you.
- ADT data can be reintegrated into your health center's core data warehouse, and in most cases, feed back to the EHR interface, so your health center care teams can truly improve care. Your HCCN may be able to help.
- AIM (Alliance for Innovation on Maternal Health) has a bundle on postpartum discharge transition that may support interoperability (saferbirth.org).
- NACHC is working with HCCNs and health centers to create new EHR systems and workflows to track key measures that factor into postpartum health (i.e.: mental health and gestational diabetes). These workflows structure the information so measures can be monitored throughout the maternal care continuum. NACHC looks forward to sharing this resource soon.

INFORMATICS
SOLUTION 2: Data Dictionaries and Value Sets

A Data Dictionary lists administrative and clinical concepts as data elements. It semantically defines attributes, meanings, relationships, and data usage within a healthcare system, database, or project. It is used as a reference guide to define the structure, format, and metadata associated with each data element, aiding in standardization, interoperability, and effective data management.

A Value Set is a collection of codes from controlled healthcare terminology standards used to define and restrict data assigned to a particular data element and its context. It establishes the permissible and meaningful variations or choices for a specific concept, allowing for consistent data capture, exchange, and analysis across different healthcare systems or platforms.

Value sets significantly contribute to data integrity, quality, and the harmonization of clinical information within electronic health records and health information systems. Certified EHRs have requirements to support the extraction of standardized terminologies and value sets in many clinical data classes.

If you are struggling to extract or use these code sets, contact your vendor or reach out to the Office of the National Coordinator for Health IT for assistance with understanding these requirements.

Here is a link to the Data Dictionary used by NACHC's partners: 2023-01-05 Women's Health Data Dictionary. xlsx. Value Sets are located in Appendix 2

ACTION 4
Implement Solutions to Share Data

Care teams can only act on information that's tracked.

Consider Best Practices When Setting Goals

The Maternal Health Champions can set short- and long-term goals with both immediate data fixes and longer-term partnerships for data sharing to improve care.

Primary goals for data collection can include:

- Gaining more accurate documentation about birth events
- Achieving better care coordination
- Reducing duplicate data entry for care team members

As discussed in Action 3, outside data can be used very effectively to close data gaps if it can be integrated back into local systems. Avoid manual processes at all costs, such as having individuals read electronic pdfs and hand-enter data as long-term solutions. These lead to new sources of data error and will waste critical staff time on non-patient care activities.

Emerging technologies, such as natural language processing (NLP) tools and artificial intelligence (AI) can be used to take unstructured data and reenter it into the data flow.

In NACHC's work with HCCNs and health centers, best practices to collect and coordinate missing data about pregnancy and delivery emerged through the following actions:

- Build or deploy the pregnancy episode in the EHR
  - Often, EHRs treat pregnancy with each visit as one where the patient is pregnant. Instead, set the record to treat pregnancy as a long-term condition with an expected end date. This allows the system to dashboard patients at specific points in gestation and creates a mechanism to ensure the outcome of the pregnancy is documented.
  - Document the birth and birth outcomes as measures.
  - Train staff on the actions needed to document birth or pregnancy outcomes and other measures chosen to track women's health postpartum.
- Standardize datasets across health centers
  - To create standardization across health centers, define the postpartum period by creating a data element that each health center can map, i.e.: the fields for live birth (Data Element "fetuses") and delivery date (Data Element "pregnancy deliveries").
  - Define the postpartum population (which is easier than defining the postpartum period). We recommend using a specific postpartum visit data element: the Data Element "postpartum_treatments". You must ensure that all health centers have this data element mapped in their instance of Relevant. Health center mapping of the "postpartum_treatment" data element and postpartum population can be used for outreach.'

Example:

> ### A. Data Element: Postpartum Treatments
>
> **Data Element Code Name:** postpartum_treatments
>
> **Data Element Fields:**
> - id (integer) *autogenerated*
> - visit_id (integer)
> - pregnancy_id (integer)
>
> **Description:** This Data Element should rely on Postpartum Visits from the OB Flowsheet. Note that it has similar fields as the Data Element named prenatal_care_treatments. The idea is to link the postpartum visit to a distinct pregnancy (pregnancy_id) and visit (visit_id). These records should be unduplicated.
>
> The measure features Value Set codes for "bundled" postpartum services. These are services often associated with postpartum visits but are not exclusive to postpartum visits. Therefore, the Value Sets are used directly in the SQL code of the Relevant Quality Measure. **Do not** join the Value Sets to the Postpartum Treatments Data Element, but rather identify the visits only through the OB Flowsheet.
>
> In this way, postpartum visits will be "clean" (or in other words, will mirror what a typical user sees in the EHR) and also available for other purposes outside of the measure.

- Create a data quality initiative.
  - Have a strike team of data analysts and clinical experts perform regular data extracts. If they can iteratively review data completeness and validate extracted data with the EHR, they can create useful data for care teams to act on. Staff should be retrained as needed.
  - Eliminate duplicate places for data documentation. Make critical data fields required to eliminate gaps or invalid data. Train staff accordingly.
  - Consider progressive goals for data accuracy and monitor regularly after the initial review.
  - Consider adding patient-generated data via apps or text messaging to fill gaps or natural language processing to mine data from free text clinical notes.
  - Build automated dashboards and validation analyses to allow data teams to monitor data completeness and invalid entries.
- Partner with area hospitals: identify how to coordinate data sharing and warm hand-offs
  - Review the **AIM bundle on postpartum discharge transition** Postpartum Discharge Transition | AIM (saferbirth.org). Health Centers can use this bundle to implement Maternal Mortality Review Committee (MMRC) prevention recommendations.
  - Reach out to local hospitals to discuss care coordination standards for interoperable data around birth outcomes and transitions. Test data feeds that connect outpatient and inpatient pregnancy transitions of care for specific health center patients.
  - Connect with your state's **Perinatal Quality Collaborative (PQC)** to help bring attention to challenges with transitions of care and the need for more outpatient obstetric and postpartum measures.

INFORMATICS
SOLUTION: Demonstrate Health Center Value to Hospitals and PQCs

- When working with partners like hospitals, consider their motivators and create "win-win" scenarios. Hospitals should not underestimate the support they gain by coordinating care with health center maternal health services.
- Collaborating and sharing local data among hospitals and health centers around pregnancy-related births and deaths illuminates gaps in care and how local health centers can fill those gaps.
- Teaching Hospitals can benefit from access to medical training rounds at a local health center maternal health clinic.

Contact your state **Perinatal Quality Collaborative** (https://www.cdc.gov/reproductivehealth/maternalinfanthealth/pqc.htm) to gain more detailed information, data, and resources on ways to coordinate local transition to postpartum care.

ACTION 5
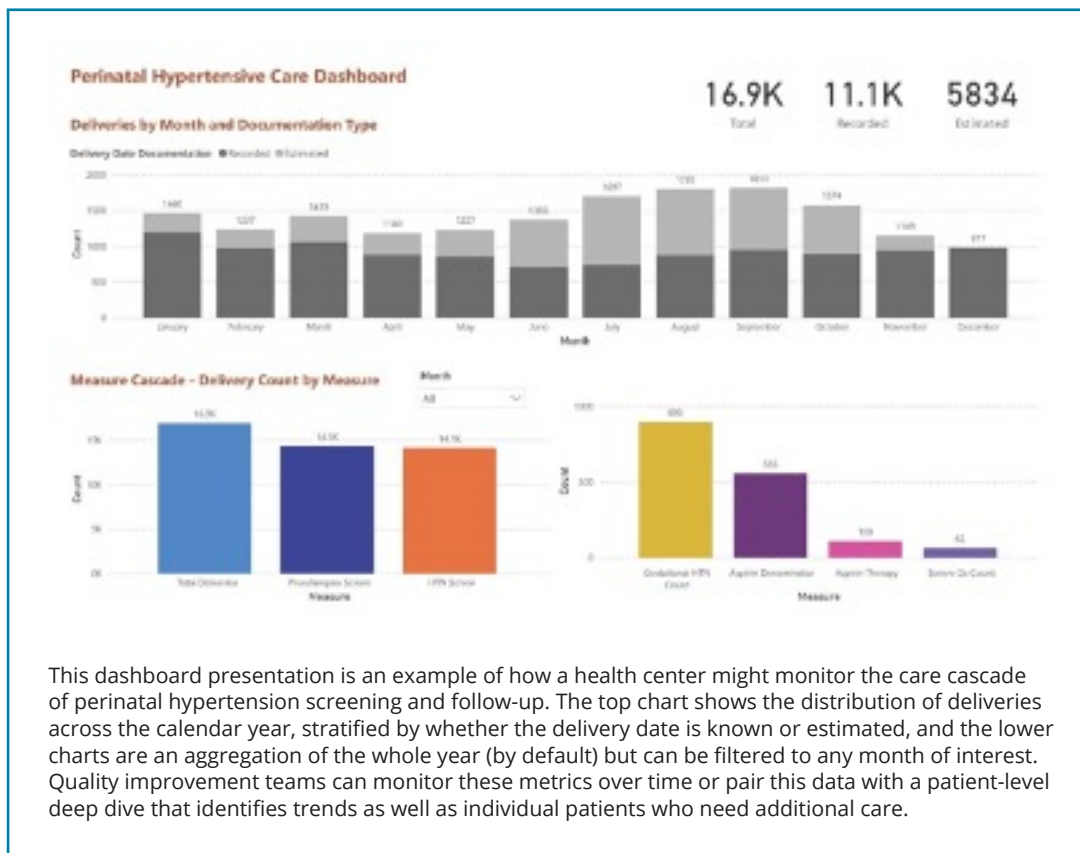# Set Up Systems for Care Team Success

Data Dashboards

Data dashboards for care teams with reminders about postpartum care measures are incredibly helpful. Reminders (i.e.: if a patient misses an important milestone such as birth, or follow-up care) are most useful when the care team helps define what's most helpful when these tools are set up. Ask them:

- What does each care team member want or need to know to provide more attentive care?
- How do RNs, PAs, Doulas, Midwives, OBs, or other members of the team want to interact with a data dashboard for maternal health?

Being able to see quality improvements on dashboards can motivate team members to document and follow up with warning signs for concerns like depression, high blood pressure, or substance use. If dashboards show pervasive care gaps or worsening performance, it may be a sign that documentation is not properly captured or a barrier exists that the team should try to correct.

Importantly, dashboards can be made accessible where actions can be taken. The goal is to use dashboards to help care teams identify specific patients with care gaps. Clinic leadership can use the dashboard to track progress toward key performance indicators (KPIs) at the population health level.

This dashboard presentation is an example of how a health center might monitor the care cascade of perinatal hypertension screening and follow-up. The top chart shows the distribution of deliveries across the calendar year, stratified by whether the delivery date is known or estimated, and the lower charts are an aggregation of the whole year (by default) but can be filtered to any month of interest. Quality improvement teams can monitor these metrics over time or pair this data with a patient-level deep dive that identifies trends as well as individual patients who need additional care.

INFORMATICS
SOLUTION 1: Dashboards to Visualize Data Collection & Use

Create dashboards for pregnant patients so obstetric staff and population health staff can close care gaps and conduct patient outreach and support.

- o Consult with users as you build dashboards to learn what and how they would like information to be displayed.
- oAllow users to open specific records directly from dashboards whenever possible.
- oInclude a customized system to flag patients who missed appointments or recommended tests and imaging.
- oAutomate dashboard updates and trigger a notification if results change significantly.
- oSupport overwhelmed care teams by displaying these dashboards to care coordinators, quality teams, and other staff like medical assistants, nurses and patient navigators. When more team members are aware of care gaps, they can initiate action and reduce redundancy in the care process. Clear documentation will ensure optimal care.

Develop Workflows and Dataflows for Care:
Use a Human-Centered Approach, EHR Tools, and MMRC Guidelines

To focus on "value" as the driving force for systems change, you must take time to talk with staff and analyze how work is being done to learn what could be improved or eliminated. This human-centered effort usually results in immediate time or money saved (or earned) and benefits continue to accrue. This step is imperative to prevent double charting, which muddies the data and frustrates clinicians.

Many organizations have older processes that don't take advantage of streamlined data collection or streamlined staff time, which will maximize revenue.

Take steps to assess the current clinical workflow with staff and use their review to consider how to optimize data collection for data-informed patient care. Consider using direct observation and process mapping to:

- Look for places where there is unnecessary workflow variation
- Find places where patients get lost in the process or lack coordination
- Relocate supplies and related activities to the place where care is delivered
- Consider work performed outside of work hours and wasted hours due to missed appointments
- Re-delegate tasks so staff are working at the top of their licenses
- Reduce clicks in the EHR
- Automate tasks wherever possible
- Consider delivery of services virtually, at home or using remote monitoring

After this assessment, it's important to align recommendations for improvement with EHR tools and evidence-based recommendations (see Maternal Mortality Review Committee (MMRC) recommendations).

Elements in the HER can be used to train staff and help address knowledge gaps. For example, pop-up question marks can bring up a recommendation if clicked. Even if the improvement is to remove just one or two clicks in the EHR, or to help non-clinical care teams understand the care process, these changes will pay off as improvements spread over hundreds of encounters.

Express Lane Elements

The components of the express lane may include:

- Column with existing meds to discontinue or reconcile or reorder
- Documentation templates to select from
- Encounter dx
- Medication and Immunizations
  - Antibiotics
  - Immunizations
  - Other postpartum prescriptions
- Postpartum contraception
  - Link to USMEC
- Labs and procedures
  - Pap smears
  - Postpartum labs and other procedures
- Level of service
- Follow Up
- Column to review allergies, problem list, and meds

Sample Smartsheet for Pregnancy Data Capture

from AllianceChicago
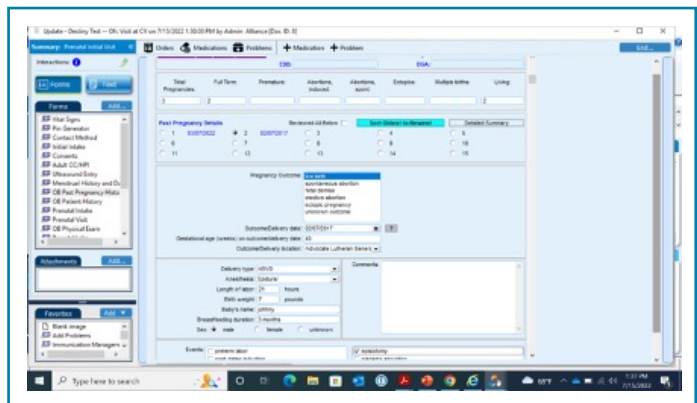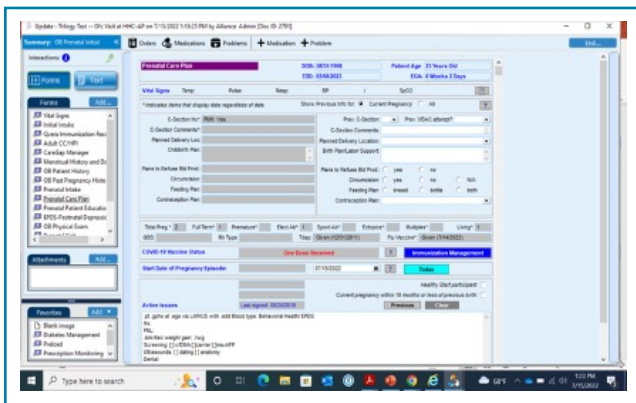
Automate Data Process for Sustainability

When creating queries to support dashboards and data extracts, make sure to fully document the process used to perform the query so it can be reused or easily modified. Having to recreate queries could risk changing the data extraction and in turn, measure results. Consider automating updates to dashboards and triggering a notification if results decrease significantly. The more you can automate the process, the less investment in time and energy the data team will need to make.

Conduct Plan Do Study Act (PDSA) cycles to ensure workflow adjustments and automation processes help. Break down tasks into steps, evaluate the outcomes, make improvements, and test again.

The complexity and variability of health IT systems can take time to develop and seem overwhelming. Standardizing the approach to each measure selected, and ensuring the entire team is using the system correctly is crucial. What care teams will learn, is that data from your system will inform care.

INFORMATICS
SOLUTION 2: Express Lanes and Access to External Data

Express Lanes: Create an "express lane", smart sheet, or dedicated section in the EHR to view relevant pregnancy data with the care team members who use this data for patient care. (Metrics defined in Action 2)

- The **express lane** allows care team members to use a single resource to address all care gaps for comprehensive care.
- **Order sets and decision support** should be included to streamline workflows and support the care team.
- Consider **customizing shortcuts** for individual care team rolls. Shortcuts can remind teams to capture of social needs data, alert the front desk or care coordinators to document outside care plans and preferences, and remind clinicians to order missing tests.

External Data Flows: Ensure that data from related systems flows into the EHR. Your aim is to avoid redocumentation and validate that care was delivered. Setting up data feeds can avoid medical errors and reduce staff time for data entry.

- **Automated testing of data feeds** will ensure they work correctly and give the earliest opportunity to correct errors.
- Consider **connecting to Health Information Exchanges (HIEs), Health Center Controlled Networks (HCCNs)** or Qualified Health Information Networks (QHINs) to reduce effort at the local level and get access to broader data.
- Ensure that the appropriate **data governance, privacy, and security programs** are in place to protect data that moves from and into external systems.

Patient Persona with Data-Informed Care Team Improvements: **Casey**

18Y G1P0 with gestational diabetes (GDM). The nurse adds diabetes to her pregnancy episode template which will trigger reminders for blood sugar checks at regular intervals.

She has a long-standing history of marijuana use. This was documented during the initial prenatal visit standard social history document and triggered a referral to behavioral health and enrollment in a patient navigator program.

She is a senior in high school and is planning to go to the local junior college. She has a job at Arby's and has a supportive parent. No family history of diabetes and was surprised by the diagnosis. Her boyfriend is not involved with the pregnancy.

She has been generally compliant with her care, getting twice weekly NST and doing daily walks for exercise. One week, she does not show up for her NST and the patient support worker calls to find her car broke down. The navigator calls to check in and offers a new appointment and a travel voucher for a ride service. At first, she was diet controlled but by 34 weeks was on insulin. She has continued to use marijuana but is considering quitting in the 3rd trimester because she is motivated by decreasing her chance of CPS involvement after delivery. Her behavioral health counselor supports her through a period of abstinence near birth, which is documented through follow up conversations with her navigator.

At 34 weeks, Casey was scheduled for additional counseling on postpartum contraceptive options and lactation and chooses an IUD as her postpartum method. Casey has a planned induction at 40 weeks which failed, and she had a C section for non-reassuring fetal heart tones. Her surgery was unremarkable, and she had a routine postpartum course with a normal fasting glucose on POD 1. She decided against breastfeeding. Was discharged on POD#3 to home. She wants to wait to have an IUD at her 6 weeks postpartum visit.

At her 1-week PO visit her c section scar was well healed. She had minimal bleeding. She was a bit concerned because she had checked her blood sugar at home and had a fasting of 130. Her baby had its 1 week appointment and is doing well. The postpartum depression screening at that visit populates into the new results section of the postpartum express lane so the obstetrician can follow up.

At her 6-week postpartum visit she was prescheduled for a 2-hour pp glucose and her Mirena IUD placement. Both of which were done without incident. Her fasting glucose was 80 and her 2-hour was 110. She is encouraged to follow up in 1 year with a diabetes screen, but to continue with the behavioral health counselor and her patient navigator for support through that year and to receive a repeat a1c screening at her 1 year postpartum primary care visit.

*** Text in teal color indicates improved care due to *******
implementation of guidelines outlined in this guide

ACTION 6
Train Staff to Collect and Use Data

Staff Training

When the entire care team understands the need for this data collection goal, it's easier for them to see health improvements and feel the impact they're making to reduce maternal mortality.

Create training opportunities that include the importance of establishing baseline data, identifying gaps in care, and an explanation of how quality improvement efforts can impact morbidity and mortality for health center patients during the postpartum experience.

Training can answer questions like:

- What does the current data show? What is the baseline data?
- What are the disparities in the local community? Does data show implicit bias for subsets of patients?
- How can data dashboards be used to address care gaps?
- What workflow, dataflow, and automation changes are being made and how can staff help improve these processes over time, so patient care can be delivered optimally?

Care teams must also be taught to pay attention to data quality, which can lead to optimal performance.

Be sure to bring Patient Navigators, Community Health Workers, and Doulas up to speed with data-collection changes. These staff members are essential as they help patients get the care they need. They can communicate directly with obstetric care coordinators and serve as a bridge between the therapeutic and peer relationship. They can also alert the care team when a patient faces barriers and needs help quickly.

Don't Forget to Educate Patients!

Let patients know about improved maternal health services at your clinic.

Consider signage around the health center as well as social media and/or marketing campaigns with patient testimonials to share the news that comprehensive care is delivered before, during, and after pregnancy at your clinic. Find ways to teach women about the 15 warning signs for maternal care, and inspire more women to come in for follow-up care postpartum.

The CDC's Hear Her campaign materials can help with this (Appendix 3).

Well-Trained Staff Drive Sustainability

Staff that use the EHR effectively will spend less time away from patients, less time documenting outside of the office, score higher on quality measures, and have less dissatisfaction with work. Leadership can appreciate these efficiencies as the foundation for sustainable data solutions.

INFORMATICS

SOLUTION: Population Health Tools

Training in upgrades to your data collection capabilities to help individual patients with pregnancy and postpartum care can expand to population health. Population health tools are an important resource to expand critical health programs and address health disparities.

Use your upgraded EHR and data dashboards to stratify population measures in key areas (to gather this data, consider the PRAPARE tool for SDOH screening):

- Age
- Race/ethnicity
- Sexual orientation
- Neighborhood
- Behavioral health/substance abuse
- Social, housing, transportation, and financial needs

Show your data to public health and local social services agencies so they can guide you to local resources that can become linkages to care and address barriers your patients may face. See Appendix 4 for more information and tips for contraceptive care postpartum.

ACTION 7
Evaluate & Report Results: Quality Improvement

Creating a Continuous Quality Improvement Culture

Continuously monitor dashboards, dataflows, workflows, and dedicate time for regular IT system maintenance. This maintenance process includes training for care teams who use and manage the EHR system.

As successful initiatives are built into the daily workflow, new efforts can be tested to meet patient needs and provide more timely care. Activities can be streamlined as part of your continuous quality improvement efforts. Aim to build these methods into your plans.

Building the systems, staff, and skills to do continuous quality improvement is a value-added effort that easily translates to new measures, new customers, and new care activities. Within 3-5 years, a quality improvement culture can permeate an organization and create the ideal environment to perform well in value-based care arrangements.

Sustainability and Scale

While this guide is about quality improvements for pregnancy and postpartum care, it is built around a data-driven, human-centered design. The human-centered design approach informs technology-enabled care that can be used in any clinical context. The expertise and collaboration this work initiates can be used across the health center. Over time it has the potential to create a culture supported by multidisciplinary approaches to continuous improvement.

As you see improvements in health outcomes, patient and provider satisfaction, costs, and equity (the Quintuple Aim), report improvements to your health center board, funders, and the community at large. Leverage findings for marketing and to raise revenue.
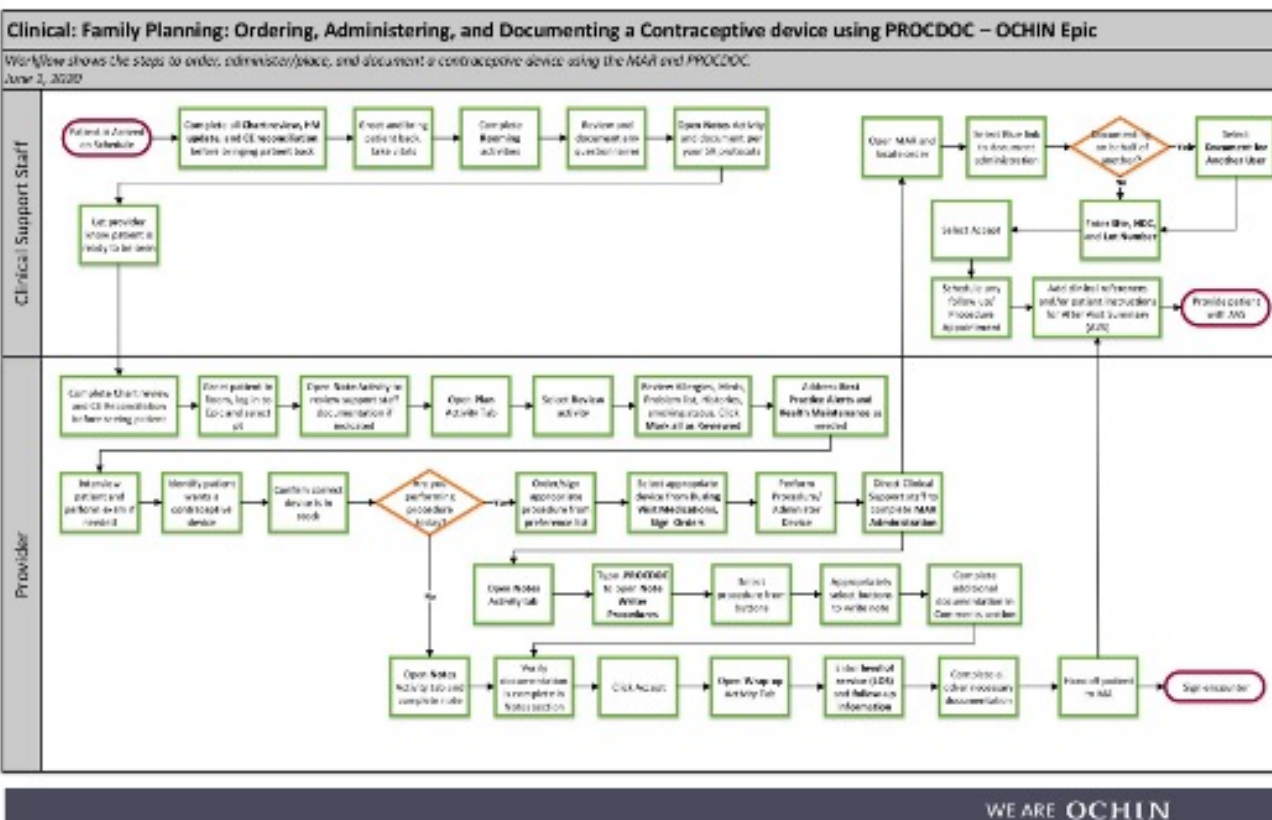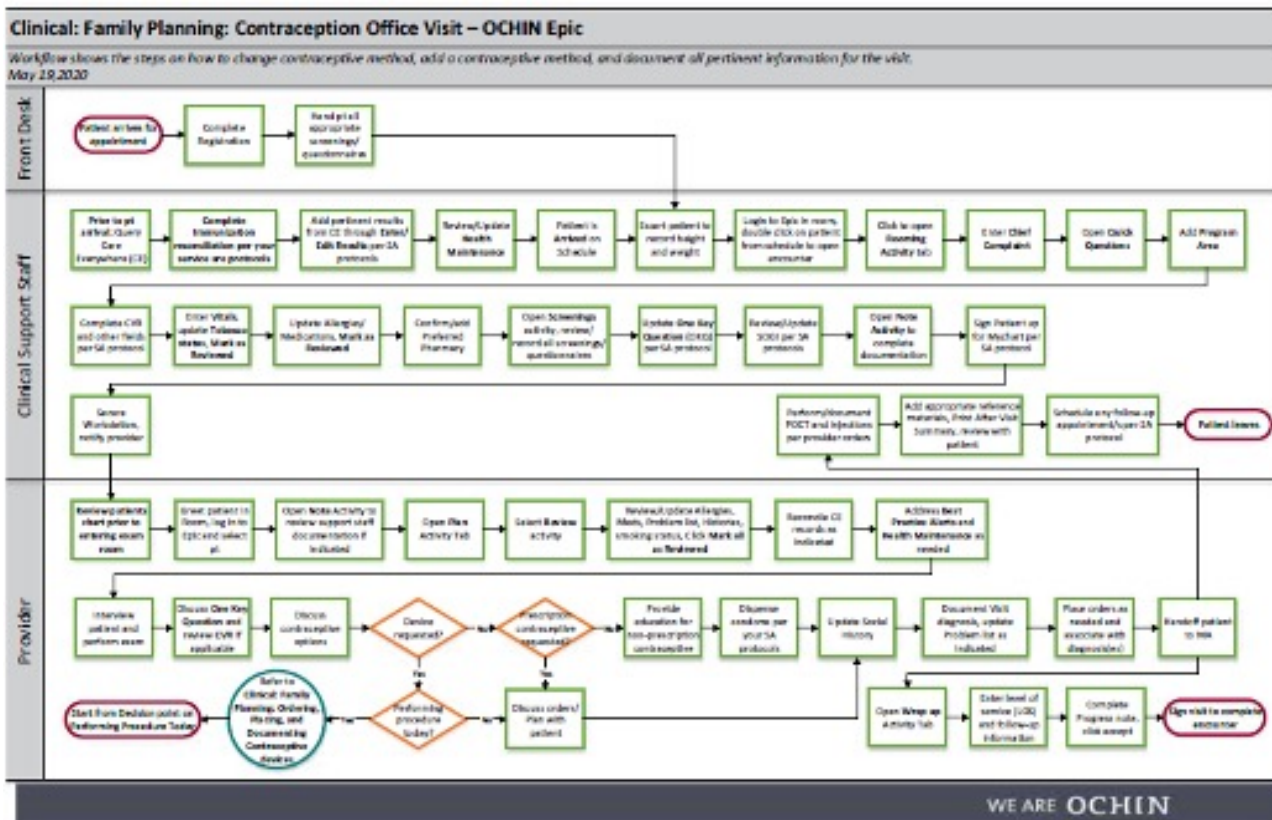
**INFORMATICS
SOLUTION: Evaluation and Reporting Results**

Quality improvement investments can yield major improvements in staff burnout and productivity, revenue, patient experience and performance scores on quality programs and value-based care arrangements.

Any care team can use the information in this guide and see an impact.

APPENDIX 1: Sample Workflows

Clinical: Family Planning: Contraception Office Visit – OCHIN Epic

Workflow shows the steps on how to change contraceptive method, add a contraceptive method, and document all pertinent information for the visit.
May 29, 2020

Clinical: Family Planning: Ordering, Administering, and Documenting a Contraceptive device using PROCDOC – OCHIN Epic

Workflow shows the steps to order, administer/place, and document a contraceptive device using the MAR and PROCDOC.
June 2, 2020

APPENDIX 2: Value Sets

ENCOUNTER

1. Postpartum Visits

- High-risk: within 2 weeks after delivery/estimated delivery date
- Within 8 weeks after delivery/estimated delivery date
- Within 12 weeks (about 3 months) after delivery/estimated delivery date

2. Contraceptive Counseling

- An encounter focused on contraceptive counseling or family planning services.

OBSERVATIONS

1. Self-Identified Need for Contraception (SINC), One Key Question

- Patient was asked questions related to the SINC questionnaire. or similar question about pregnancy intent

2. Last Menstrual Period (LMP)

- Date of the LMP

3. Age of Gestation

- Age of Gestation of the pregnancy, reported as a numeric value in weeks, or as an ICD-10-CM Z-code

4. Estimated Delivery Date (EDD)

- Date representing the estimated delivery date of a pregnancy

DIAGNOSES AND/OR CONDITIONS

1. Pregnancy

2. Delivery

3. Pregnancy Complications
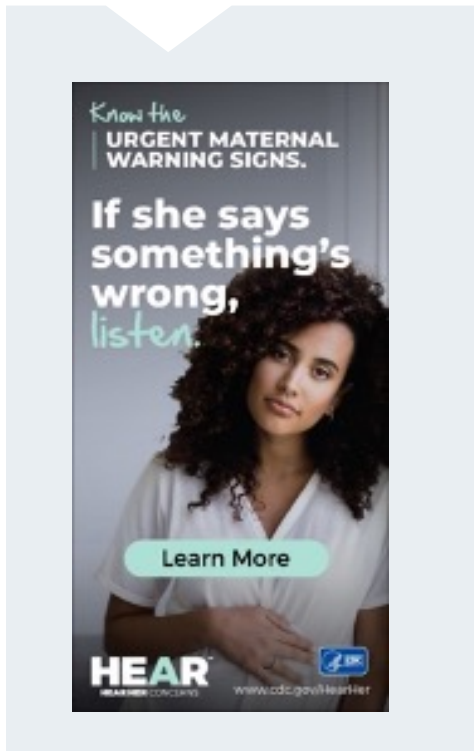
4. Pregnancy with Abortive Outcome

5. Abortion

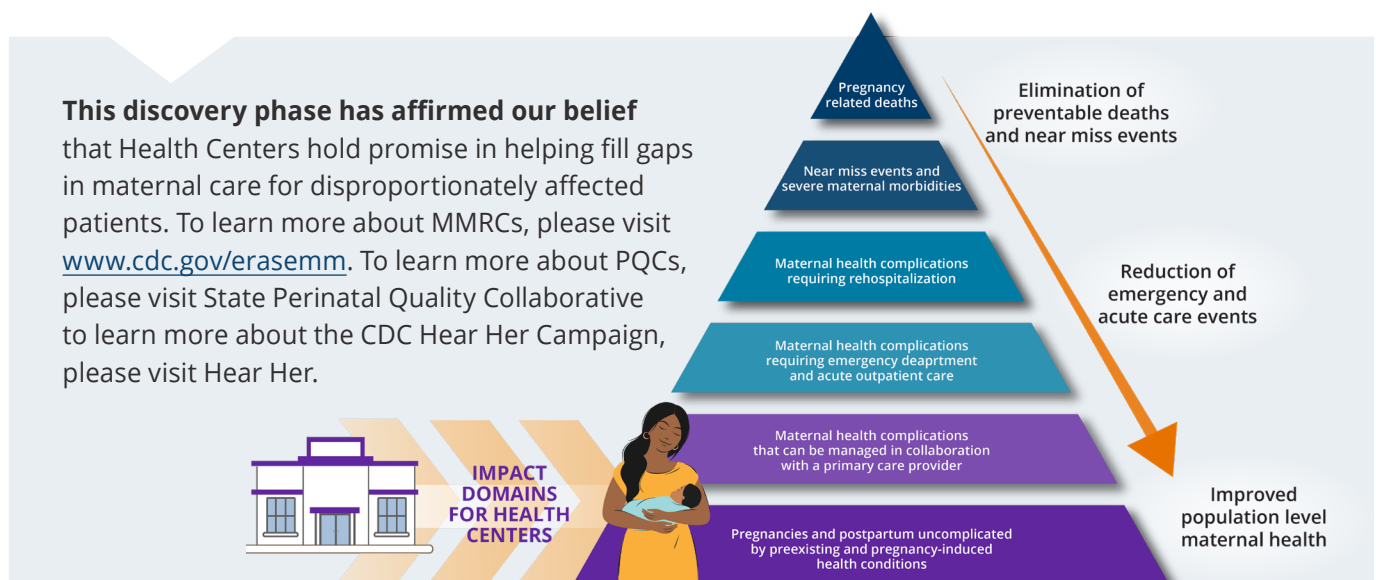6. Spontaneous Abortion / Miscarriage

7. Stillbirth

8. Female Infertility

APPENDIX 3: Resources for Health Centers, Care Teams and Patients

HEAR HER CAMPAIGN, CDC

NACHC efforts to enhance the value of health centers in maternal care:https://www.nachc.org/resource/continuum-of-care-integration-the-health-center-advantage-for-maternal-health/

This discovery phase has affirmed our belief that Health Centers hold promise in helping fill gaps in maternal care for disproportionately affected patients. To learn more about MMRCs, please visit www.cdc.gov/erasemm. To learn more about PQCs, please visit State Perinatal Quality Collaborative to learn more about the CDC Hear Her Campaign, please visit Hear Her.

APPENDIX 4: Public Health Reporting

HL7 FHIR STANDARD

HL7 FHIR Implementation Guide (technical) Birth and Fetal Death Reporting

Click on "All FHIR Artifacts" in the red ribbon to see links to how the data are represented in FHIR for data exchange and reporting.

See the names of the clinical element and details of what is represented within each data element(for example, see standard codes to represent the concept, dates/time, providers, etc.)

Here are the categories of the approximately 75-100 data elements

- Profiles Abnormal Condition of the Newborn
- Profiles Congenital Anomalies of the Newborn
- Profiles Characteristics of Labor and Delivery
- Mother Prenatal Profiles
- Infections During Pregnancy
- Medical and Health Information Profiles
- Obstetric Procedures
- Final Route and Method of Delivery
- Pregnancy Risk Factors Profiles
- Maternal Morbidity Profiles
- Fetal Death Information Profiles
- Parent Information Profiles