

Quality Improvement Approach to Eliminate Disparities in Perinatal Morbidity and Mortality



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KEYWORDS

- Quality improvement • Perinatal • Disparities • Maternal mortality
- Maternal morbidity • Implementation • Equity • Population health

KEY POINTS

- Women and infants of color are disproportionately affected by health care disparities.
- The Socio-Ecological Perinatal Disparities Ishikawa Diagram outlines numerous modifiable factors that can be addressed to reduce societal, community, relationship, and individual factors that contribute to perinatal disparities.
- Quality and safety principles can be used to guide national, state, and hospital-based efforts to eliminate disparities and ensure equity for all women and newborns.

INTRODUCTION

Black women are 3 to 4 times more likely to die when giving birth in the United States than white women.¹ Variation in rates of pregnancy-related death has persisted for more than 30 years and represents the greatest disparity among indicators of maternal and child health.^{2,3} In a national study, case-fatality rates of black women were 2 to 3 times higher than those of white women for 5 conditions (preeclampsia, eclampsia, placenta abruption, placenta previa, and postpartum hemorrhage) even though these

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conditions were not more prevalent among black women than white women.⁴ More than twice as many black women than white women (4.2% compared with 1.5%) suffered from severe morbidity at the time of birth.⁵ Researchers have also shown that black women have had more inductions of labor, episiotomies, and cesarean births than white women.⁶ In some cities, Hispanic women are more likely to suffer severe maternal morbidities and have higher rates of pregnancy-related death than white women.^{7,8} In addition, Hispanic infants are more likely to suffer morbidities, and black infants are twice as likely to die.^{9,10}

These haunting statistics clearly illustrate that disparities “are not simple differences, but rather inequities that systematically and negatively affect less advantaged groups.”¹¹ Inequities in perinatal health care are unacceptable, and quality and safety initiatives are needed to ensure equitable care for all women and newborns. Recent data that demonstrate an increase in US maternal deaths during the past decade¹² highlight the dire need to decrease mortality and morbidity rates for all women and newborns.

A quality improvement (QI) approach has been successfully used to improve clinical outcomes, suggesting that QI can be a powerful tool to eliminating disparities. For example, universal newborn screening programs for metabolic disorders were successfully implemented in all hospitals, in all states more than 50 years ago.¹³ QI initiatives have also been used to achieve outcomes that were considered highly improbable. For example, neonatal intensive care unit (NICU) leaders recently reduced the incidence of central line infections,¹⁴ an occurrence that was previously believed to be inevitable. In fact, some NICUs have gone more than a year without central line infections. This success required careful attention to details; every step in the process was analyzed, and improvements were made as needed.

The authors propose that the following 5 quality and safety strategies should be used to guide national, state, and hospital-based efforts to eliminate disparities in perinatal outcomes and to ensure equity for all women and newborns.

STRATEGY 1: APPLY A SYSTEMS APPROACH BASED ON THE SOCIO-ECOLOGICAL MODEL

“Every system is perfectly designed to get the results it gets.”¹⁵ Our society and communities are currently perfectly designed to generate disparities in perinatal outcomes. But systems can be changed. The Socio-Ecological Model is commonly used by public health leaders to guide systems approaches to analyzing and identifying solutions to complex problems. The key insight of this framework is that a person’s health is not just a function of his or her individual behaviors but also of relationships, factors present in the community, and societal context (**Fig. 1**). The Socio-Ecological Model encourages a broad, non-health care centric, systems approach to help identify the root causes of perinatal disparities.

Ishikawa cause-and-effect (fish bone) diagrams are used by quality and safety leaders to understand the key components in a system that led to a failure or contributed to a poor outcome. The Institute for Perinatal Quality Improvement used the Ishikawa diagram format and the Socio-Ecological Model to develop the Socio-Ecological Perinatal Disparities Ishikawa Diagram (**Fig. 2**). This diagram outlines numerous modifiable, system-level factors that can contribute to perinatal disparities. For example, hiring, orientation, and training practices may not be as comprehensive and may be shorter in duration for nurses among various hospitals. As a result, nurses at one hospital may be less skilled than those at another hospital, and this will affect outcomes.

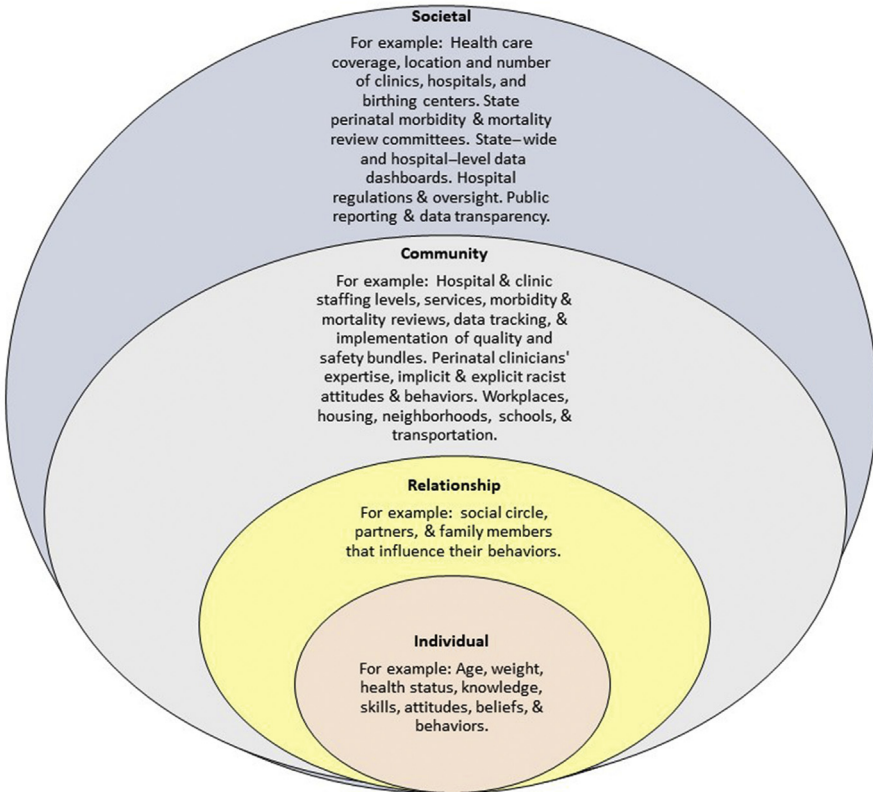


Fig. 1. Socio-Ecological Model.

Another system-level community factor is perinatal nurse staffing ratios, which vary from hospital to hospital.¹⁶ Hospitals at which black women give birth may have lower nurse to patient ratios, thus fewer nurses are available to monitor patients, mobilize the team should a patient's condition deteriorate, provide routine care, and develop and implement QI initiatives. In a study of labor nurses, participants indicated that when they were too busy, they missed essential components of care, including complete review of the patient's history, prenatal records, and laboratory results; timely monitoring; and timely examinations.¹⁷ These examples illustrate factors that can be modified to eliminate or greatly reduce disparities in perinatal outcomes.

STRATEGY 2: IDENTIFY ROOT CAUSES OF DISPARITIES

The first step toward reducing disparity and ensuring equity is exploring the root causes, drivers, or social determinants of perinatal disparities within our communities and facilities. A root cause analysis requires being open to learn, change, listen, and see what may not have been seen previously.

One QI approach to finding root causes is to ask "why?" multiple times. For example, if a woman is late or misses her prenatal appointment, stop and ask "why?" Do not rely solely on your assumptions. Instead, consider asking her (in a nonjudgmental way) why she was late. Consider all the barriers she may have faced to get to the appointment (eg, child care, transportation, work, school). The location

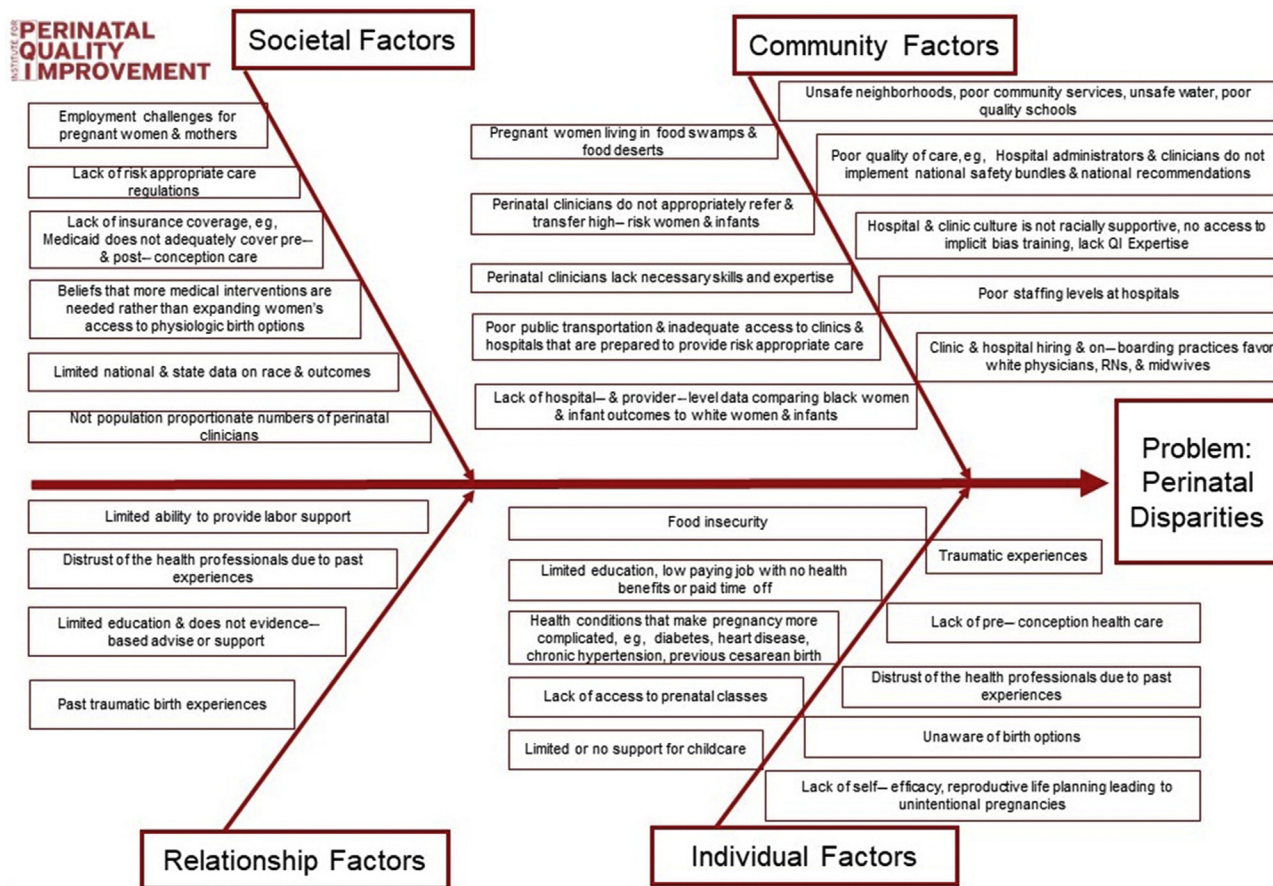


Fig. 2. Socio-Ecological Perinatal Disparities Ishikawa Diagram. (Courtesy of Copyright owned by the Institute for Perinatal Quality Improvement, www.perinatalQI.org, 2018, All rights reserved. Reprinted with permission.)

and hours of the clinic, public transportation schedules, and her lack of social support may affect her ability to get to the office. Similarly, it is critical to explore thoroughly the root causes of all sentinel events, near-miss events, and errors by asking “why?” A robust reporting system that encourages individuals to report, explore, and learn from poor outcomes is an effective way to identify root causes.

One major root cause of disparities is structural racism, the seen and unseen interaction among policies, practices, and institutions that perpetuate barriers preventing women and infants of color from receiving equitable and safe health care.¹⁸ A root cause analysis can help uncover structures that contribute to disparities or inequity in the provision of care. Structural racism is perpetuated by conscious and unconscious bias and must be identified, better understood, and changed. For example, a clinician may blame black and Hispanic women for worse perinatal outcomes by assuming their behaviors reflect poor choices. However, disparities in health and health care are driven by a complex web of factors. A recent summary of epidemiologic studies about disparities in preterm birth rates concluded that place matters: not because of geography but because of systemic and structural dynamics present in social and political institutions.¹⁹ Many more black women than white women live in “food deserts”²⁰ with few healthy food options or in “food swamps”²¹ with limited healthy food options. In addition, higher crime rates in low-opportunity neighborhoods make it much riskier to go for a walk, play at the park, or even read a book in your own home. The cumulative effects of these negative experiences during a lifetime are not modifiable by the individual.²²

Many clinicians routinely perpetuate structural racism. Physicians, nurses, and midwives, whose life work is dedicated to the care and healing of others, may be particularly resistant to acknowledging their roles in sustaining structural racism. Yet the facts demonstrate variation in the quality of care provided at different hospitals. For example, the risk of severe maternal morbidity at one hospital can be 6 times greater than the risk at another hospital, even after accounting for patient risk factors.⁵ Not surprisingly, black and Latina women are more likely to give birth at hospitals with worse outcomes.⁵ A black woman with the same risk factors as a white woman is more likely to experience severe maternal morbidity because of where she gives birth. In New York City, nearly 1000 black women could avoid severe morbidity during their birth hospitalizations each year if they gave birth at the same hospitals as white women.⁵

Numerous factors in **Fig. 2** could benefit from thorough, root cause analyses. For example, inappropriate and derogatory comments, such as “those women never take care of themselves” or “abuse the Medicaid system” are considered acceptable by some clinicians. It is important to determine the root cause of these comments and to ensure that all clinicians receive implicit bias training to prevent such comments from being made and tolerated in the future. Bias training helps clinicians become more aware of how their conscious and unconscious assumptions affect how they provide care to women of color. Bias can also manifest itself in many subtle ways, such as discounting racial and ethnic patients’ symptoms or failing to adequately listen when women complain of pain. Implicit bias training was recommended by the Council on Patient Safety in Women’s Healthcare as one strategy to reduce disparities because it has been shown to change attitudes and behaviors.¹¹

Women of color may feel uncomfortable asking questions because of how they were previously treated by health care providers. These experiences may affect their ability to trust the current health care team. Other community factors could be

explored through root cause analysis. For example, a nurse manager could explore the lack of diversity among the nurses who work on the labor and delivery unit. This root cause analysis may reveal that recruiters do not seek out graduates with diverse racial and ethnic backgrounds. Alternatively, personnel hiring and on-boarding practices may prevent a racially diverse work force, without which the team will lack different perspectives and life experiences.

STRATEGY 3: IDENTIFY AND ELIMINATE STRONG BUT WRONG ROUTINES

“Hospital quality may be a critical lever for improving outcomes and narrowing disparities.”²³ All routines should be scrutinized and improved; however, a barrier to this process is that “strong but wrong routines”²⁴ are woven throughout clinical care. These routines are so thoroughly ingrained that it is difficult for clinicians to recognize how they contribute to deaths and injuries of women in the perinatal period. For example, for many years, estimation of blood loss at birth remained common practice despite research as early as the 1960s that demonstrated its inaccuracy.²⁵ In 2008, the California Maternal Quality Care Collaborative reviewed maternal deaths and pointed out that quantification of blood loss was possible and preferable. From this point, clinical practice is changing from estimation to quantification of blood loss.^{26,27}

Openly discussing deaths, errors, and near-miss occurrences helps to identify structures and processes that need to be improved. Indeed, among high-reliability organizations, leaders routinely scrutinize their behavior, proactively look for potential problems, and seek to eliminate what may seem like the smallest of errors.²⁷ Deaths, errors, or cases of morbidity provide opportunities for learning that can lead to crucial changes. High reliability organizations establish cultures in which it is psychologically safe and desirable to discuss mistakes and proactively look for possible errors. They promote cultures that avoid blame and shame.²⁸

Although individual clinicians may not have the authority to write policies for organizations, they can influence changes in practice by admitting their mistakes and identifying when a mistake was almost made irrespective of the outcome. As the Institute of Medicine emphasized, “to err is human,”²⁹ and no clinician is perfect. All clinicians will make mistakes at some time in their careers. The true test of clinicians’ mettle is how they handle these occurrences.

Racist words and actions, just like medication errors, contribute to the preventable deaths of women and infants. Racist jokes, comments, structures, or practices may be strong but wrong routines that perpetuate a culture of disrespect and differences in how women and infants of color are cared for. These routines may be even harder to identify and change than procedure or medication errors because many are unconscious, or invisible, to individuals. Racist actions or words should be identified and addressed through reviews in the same way other health care errors are identified and reviewed.

The SPEAK UP for Black Women campaign, developed by the Institute for Perinatal Quality Improvement, encourages health care professionals (hospital administrators, clinicians, and public health leaders) to speak up against racism whenever they see racist behaviors or hear racial slurs. Individual clinicians have the power and responsibility to change the discourse (verbal, nonverbal, written) in which they participate. These types of discourse indicate the culture of an organization and how rapidly change will occur.³⁰ Clinicians who witness differences in care or disrespect of patients because of their race or ethnicity and do not speak up are complicit in racism. The SPEAK UP campaign encourages clinicians to receive implicit bias training and to sign the SPEAK UP pledge (Fig. 3).

SPEAK UP FOR BLACK WOMEN

S	—○	SET LIMITS Only allow racially respectful dialogue and actions in your work space.
P	—○	PRACTICE & PREPARE Plan how you will act if you see or hear someone being treated or referred to disrespectfully.
E	—○	EXPRESS CONCERNS Discuss, but do not blame others.
A	—○	APOLOGIZE If you said or did something that others find hurtful.
K	—○	KEEP IMPROVING Be mindful and willing to become aware of your unconscious biases.
U	—○	UNCOVER AND LEARN from disrespectful comments and actions, including “jokes”.
P	—○	PERSUADE OTHERS to SPEAK UP!

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Fig. 3. The SPEAK UP campaign. (Courtesy of Copyright owned by the Institute for Perinatal Quality Improvement, www.perinatalQI.org, 2018, All rights reserved. Reprinted with permission.)

STRATEGY 4: USE IMPROVEMENT AND IMPLEMENTATION SCIENCE METHODS AND TOOLS

“Implementation research is the scientific study of methods to promote the systematic uptake of research findings and other evidence-based practices into routine practice, and, hence, to improve the quality and effectiveness of health services and care.”³¹ Improvement science is related to but different from implementation science. Improvement science is defined as an applied science that emphasizes innovation, rapid-cycle testing in the field, and spread to generate learning about what changes, in which contexts, produce improvements.³² Implementation science and improvement science is used to guide the development, implementation, evaluation, and dissemination of QI initiatives that are designed to expand the use of evidence-based care.

Set SMART Goals and Benchmarks

QI leaders need to set goals and benchmarks. SMART goals are Specific, Measurable, Achievable, Relevant, and Time-bound. Too often the QI goals are set at 80% or 90%, rather than at 100%. Leaders and staff may also stop trying to make improvements if their goals are set too low.³³ Benchmarks with interim goals help the group track and make progress. However, once a benchmark is achieved, a new interim goal should be set until the improvements reach the ultimate goal of 100% of the population. Goals and benchmarks should be set so that they can be compared with those of other hospitals and states. Comparing outcomes in one hospital with other hospitals expands the work beyond the local context, which is often useful to identify areas in which additional improvements are needed.

QI leaders must work to ensure that vulnerable populations are included in all QI initiatives. To claim success and stop our efforts before we have made improvements for everyone leaves part of the population behind. The women and infants who are left behind may be the part of the population that needs the improvements the most. The work of quality and safety leaders is not completed until every woman and infant's outcomes are improved.

Start with Small Tests of Change Using a Quality Improvement Process Model

One of the first places to begin tackling a complex issue, such as reducing perinatal disparities, is to ensure that all women and infants have access to evidence-based interventions. These include safety protocols to standardize care, triggers, checklists, enhanced communication, and teamwork. Three QI implementation strategies used by leaders are education, discourse, and data.³⁴ Specific tactics can be used within each strategy. Many types of educational tactics can be used in QI initiatives. The QI leader can use academic detailing (one-on-one discussion of an academic article), classroom education, and online education. Discourse tactics can include staff meetings, bulletin board displays, and e-mails. Data tactics can include graphs, infographics with both data and images that illustrate the data, and dashboards.

Sustain Improvements

Competing priorities were identified as a significant threat to sustaining the gains of a QI initiative.³⁵ Whenever the QI leaders begin to introduce new QI initiatives, they also need to perform periodic surveillance because it is important to know whether the previous successes are being sustained. Effective continual surveillance provides alerts. Ongoing surveillance is particularly important when working to reduce long-standing perinatal disparities.

STRATEGY 5: USE DATA TO GUIDE THE PLAN AND TRACK PROGRESS

Data form the foundation of system thinking, root cause analyses, and QI methods. QI leaders need to be thoroughly informed about how data are collected and presented to ensure that no racial group or ethnicity is risk adjusted out of their hospital's QI data. Data variation is how QI leaders identify opportunities for improvement.

Donabedian's³⁶ structure, process, and outcomes QI data measurement categories are a practical way to use and categorize data to guide QI efforts. These data categories are useful when developing the QI metrics to assess, plan, and track QI progress. Balancing measures, especially when working to make improvements in maternal outcomes, also may be needed. It is important to have a balance between maternal and neonatal measures to ensure that a QI effort designed to reduce cesarean births, for example, does not lead to negative, unintended consequences for the infants.

Structural changes, such as improving an electronic health record, developing a new policy and procedure, or providing education for the clinical staff, make it easier for clinicians to do the right thing. Structural changes are especially necessary when working to eliminate perinatal disparities. For example, ensuring that more women and men of color are admitted to medical and nursing schools and are hired to work in the outpatient and inpatient settings is a needed change. Only by achieving a diverse workforce will we be able to serve the needs of our ever-increasing diversity of patients. Further, unconscious bias training needs to be implemented in medical schools, nursing schools, and hospitals to help recognize our own biases and serve our patients better. Structural changes that will reduce disparities could include more convenient clinic hours, making it more accessible for the most vulnerable populations or implementing implicit bias training. Structural changes may be the changes that take the longest to make, but structural changes are worth the effort because they are the hardest to circumvent.

Process measures, such as quantification of blood loss, performing risk assessments, and accurately taking a blood pressure, are focused on changing clinicians' behaviors. Examples of a disparity-related process measure is to implement more respectful dialogue among the clinicians, change hiring practices, and change onboarding practices. Outlining examples of what is and is not respectful speech and actions and performing role playing are tactics that can be used to successfully implement these process improvements.

Rates of severe maternal morbidity and mortality are an example of an outcome measure. Data need to be analyzed and presented in such a way that any differences in outcomes by race and ethnicity are easy to identify. QI data need to be designed so that outcomes of different racial and ethnic groups can be easily compared within a hospital, across hospitals, communities, regions, and nationally. Hospital-level severe maternal morbidity data showed a wide variation in black women compared with white women.⁵ These data provide the opportunity for further explorations. For example, the hospitals with the highest rates of severe maternal mortality should perform a formal root cause analysis to determine why their rates are higher than other hospitals. In addition, there also can be disparities within the same hospital.⁵ Knowing the differences in severe maternal morbidity for black women compared with white women, especially if the black women gave birth at the same hospital as the white women, will help support the root cause analysis that will guide the development and implementation of a targeted QI initiative. Recording race and ethnicity birth data as accurately as possible is a recommendation from the Council on Patient Safety and is critical to the success of QI efforts designed to eliminate preventable disparities.¹¹

SUMMARY

A disproportionate number of women and infants of color are suffering preventable harm in the United States resulting in the premature loss of life. These losses create a cascade of negative effects across multiple generations. Each maternal death can result in grandmothers, grandfathers, aunts, uncles, friends, and communities stepping in to raise a motherless child. Each loss of a child results in excruciating and life-long pain for mothers, fathers, and families. These premature losses put families of color at a disadvantage over the life-course.

More than half of maternal deaths are preventable.^{37–39} We must act now to increase our QI capacity if we are to reduce the 17-year lag time between knowing and doing.⁴⁰ Applying QI principles to the complex, multifaceted goal of ensuring perinatal equity for all women is an important start to mapping out and implementing a course of action. When trying to resolve complex issues and make important changes, we can be energized and encouraged by what Margaret Meade said: “never doubt that a small group of thoughtful, committed citizens can change the world; indeed, it’s the only thing that ever has.”⁴¹

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