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Colorado Hospital Association
Center for Clinical Leadership and Excellence

cpcqc

# Labor and Delivery Quality Improvement Survey

## Summer 2024

Conducted by CHA's Center for Clinical Leadership and Excellence in collaboration with the Colorado Perinatal Care Quality Collaborative

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# Executive Summary

More than 62,000 births occur in Colorado every year, with the vast majority – 97% – occurring in acute care hospitals. Labor and delivery (L&D) units represent comprehensive services focused on patients giving birth in Colorado's hospital settings and offer a range of acute clinical services focused on delivering high quality care and positive patient experience. Every facility broadly leads, implements, and engages in robust quality improvement (QI), quality assurance, and patient safety activities – including those with L&D services. Despite extensive endeavors by the hospital and health care community to decrease maternal morbidity and mortality rates, both remain significant public health challenges.

In early fall of 2023, Colorado Hospital Association's Center for Clinical Leadership and Excellence (CCLE) and the Colorado Perinatal Care Quality Collaborative (CPCQC) set out to build a deeper understanding of the quality improvement landscape in Colorado L&D units, in addition to facilitators and barriers to growing and sustaining meaningful QI work. A survey was developed and distributed to all 52 L&D units across Colorado. A survey was completed by each L&D unit, representing a 100% response rate and exemplifying commitment of the hospital community to ongoing clinical improvement and safety initiatives. In addition, two focus groups representing 14 urban and rural facilities were held to collect additional data and reflect on information gathered from the surveys.

**Key takeaways:**

1) A majority of Colorado L&D units are implementing, or plan to implement, common perinatal quality and safety initiatives. When asked about 25 potential perinatal safety topics, Colorado L&D units cited complete implementation of work most frequently related to obstetric hemorrhage, severe hypertension, perinatal depression and anxiety, and fetal heart monitoring. Many hospitals are also planning or actively implementing interventions targeting other impactful quality improvement and safety activities, including racial and ethnic disparities, medications for opioid use disorder, and safe reduction of c-sections, among others.
2) Surveyed hospitals expressed interest in QI programs regarding perinatal mental health conditions, sepsis, and hemorrhage through statewide patient safety bundles, indicating a desire for further improvement even within topic areas cited by hospitals as already prioritized for implementation. There is strong interest in implementing the nationally recognized Alliance for Innovation on Maternal Health (AIM) bundles if resources are available to do so.
3) Eighty-five percent of hospitals report participation in QI programs with the state's designated perinatal quality collaborative (PQC). However, data from CPCQC show that 67% of hospitals participate in at least one PQC-led activity. The difference in data illuminates definitional and structural challenges with L&D QI activity. Further work is needed to define PQC-led QI participation and communicate the value for statewide hospital engagement.
4) Several factors facilitate meaningful QI in hospitals, including engaging multidisciplinary teams, using standardized tools and frameworks, and ensuring staff have dedicated time to perform the work – especially data collection, analysis, and submission.
5) Many challenges exist to growing and sustaining quality improvement work. Workforce challenges – including limited staff time, high turnover, and difficulty engaging all members of the clinical team – are significant factors that impede progress on QI initiatives. Additional challenges include lack of

interoperable electronic health record data, barriers to navigating community resources, and the need to balance QI activity with care delivery in dynamic L&D settings.

6) Most surveyed hospitals are interested in statewide QI collaboration, with a significant percentage (33%) unsure. Additional work is needed to highlight benefits of PQC participation and programs that encourage statewide collaboration. The PQC may find benefit in collaborating with hospital industry leaders and key stakeholders to further communicate and raise awareness around potential opportunities.
7) Opportunities exist to better integrate severe maternal morbidity, race, ethnicity, and social drivers of health data into already-established hospital governance structures, such as quality committees. These structures can also support navigating the complexities of streamlining data collection and analysis related to QI data more broadly.
8) While some hospitals do evaluate outcomes by race, ethnicity, and social determinants of health, additional research is needed to understand facilitators and barriers for hospitals that are not regularly engaged in this practice. Further research is also needed to understand how hospitals utilize this data once collected.
9) The vast majority of L&D units evaluate patient experience data from patients who have received care in their facilities. Additional research is needed to understand how such data is used to inform clinical practice and clinical operations.

## Introduction

More than 62,000 births occur in Colorado annually, with 97% of these births taking place in acute care hospitals. L&D units encompass the suite of services offered to patients giving birth in Colorado hospitals. The clinical services provided in L&D units include obstetrics and elements of hospital medicine, emergency medicine, surgery, and critical care. Hospitals and their care providers are committed to providing high-quality care to their patients and communities. Unfortunately, despite substantial efforts by the hospital and health care community to reduce maternal morbidity and mortality, both issues continue to be major public health challenges. While certain contributing factors begin and end outside the walls of the hospital, there are opportunities for hospitals to improve internal processes and to screen, diagnose, treat, and refer patients to appropriate care during their brief interactions with the facility. To achieve the best possible outcomes during and immediately following a hospitalization related to maternity care, hospitals integrate and implement robust quality improvement and patient safety programs. While these programs share critical foundational elements, they also vary among hospitals.

Colorado Hospital Association's CCLE and CPCQC set out to build a deeper understanding of the quality improvement landscape in Colorado L&D units. Together, CCLE and CPCQC are identifying ways to enhance their support and engagement, including evaluating interest in potential statewide perinatal patient safety programs in addition to the driver and inhibitors of meaningful QI work.

## Methodology

CCLE, in collaboration with CPCQC, launched a survey to better understand the current state of, and interest in, quality improvement and patient safety activities in Colorado hospitals with labor and delivery services. Of the 88 acute care hospitals in Colorado, 52 have L&D services. The survey was administered to these 52 facilities in January 2024 and 100% of the facilities surveyed responded. Responses were collected in SurveyMonkey and reviewed by an internal team. While responses were not able to be disaggregated by hospital characteristics or demographics (i.e., rural vs. urban, safety net status, share of patients on Medicaid, etc.), this presents an opportunity for future surveys and discussions with hospitals to understand the differing needs of various facility types.

In addition, four focus groups were held, including two entirely focused on rural L&D units. A total of 20 L&D and quality department leaders participated, representing facilities from urban and rural environments from the Western Slope to the Eastern Plains. Both the survey and focus group implementation and analysis were conducted in collaboration with CPCQC with grant funding from the Health Resources and Services Administration.

This report was endorsed by CHA's Clinical Leadership and Excellence Council prior to publication.

## Section 1: Stages of Readiness for Quality Improvement in Specific Maternal Care Safety Areas

Approaches to quality improvement often include developing processes for identifying and mitigating safety risks, implementing clinical protocols for rapidly responding to emergencies when they occur, providing continuous education and communicating scientific advances to hospital staff and patients, and collecting and analyzing patient safety data.

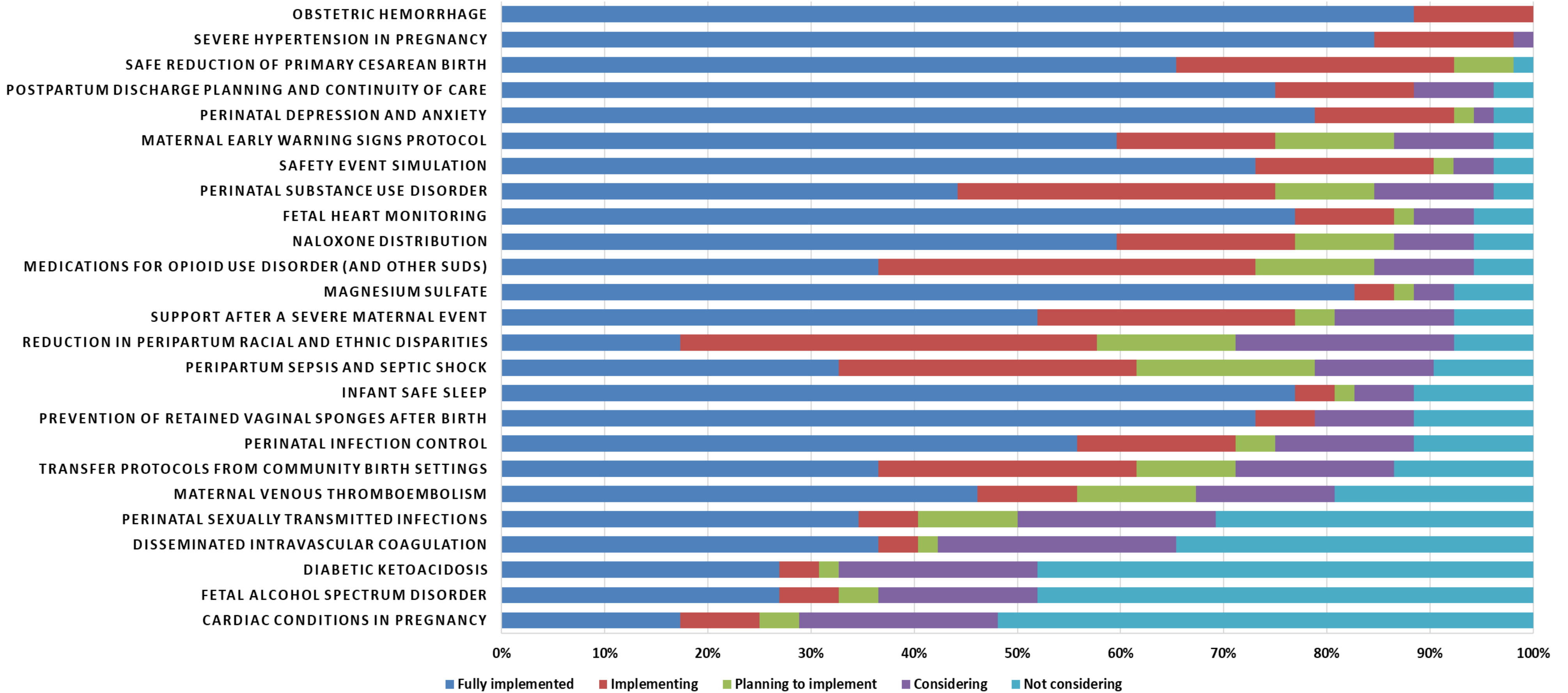
The most common quality improvement initiatives that have been fully implemented across Colorado L&D units include those related to obstetric hemorrhage, severe hypertension, magnesium sulfate protocols, perinatal depression and anxiety, and fetal heart monitoring. The most common areas that are being actively implemented include reduction in peripartum racial and ethnic disparities, medications for opioid use disorder and other substance use disorders, responding to sepsis, and safe reductions in primary c-section birth.

While all quality improvement initiatives are important to improving outcomes, implementing too many programs at one time can be distracting and limit overall success. It is common for hospitals to select the most meaningful and clinically appropriate areas to focus on at any given time based on what is most meaningful for their patient population and community. Areas not currently being considered include cardiac conditions, diabetic ketoacidosis, and fetal alcohol spectrum disorders. This may be in part because patients with advanced or critical medical conditions may be transferred to another facility for ongoing management of that condition.

**Key Takeaway:** The most implemented work across Colorado L&D units include those related to obstetric hemorrhage, severe hypertension, perinatal depression and anxiety, and fetal heart monitoring. Many hospitals are also planning or implementing interventions targeting racial and ethnic disparities, medications for opioid use disorder, and safe reduction of c-sections, among others.

When selecting quality measures and programs for statewide implementation, considering hospital readiness is key for support, adoption, and momentum-building. Opportunities may also exist to bolster support in partnership with hospitals already in active implementation or planning stages for perinatal QI programs.

Stages of readiness for 25 quality improvement and patient safety topics are summarized in the table below. Brief descriptions of each topic area are available in Appendix I. A data summary table is available in Appendix II.



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## Section 2: AIM Bundle Implementation

AIM bundles are evidence-based toolkits backed by the American College of Obstetricians and Gynecologists and designed to improve perinatal outcomes and reduce maternal morbidity and mortality. These bundles encompass critical areas of maternal health care, such as hemorrhage, hypertension, and perinatal substance use care, providing actionable strategies and protocols for health care providers. By standardizing care processes, the AIM bundles facilitate the implementation of best practices nationally. They focus on timely identification, effective management, and prevention of complications through a multidisciplinary approach. In Colorado, CPCQC facilitates statewide QI learning collaboratives focused on implementation of select AIM bundles. CPCQC currently oversees hospital implementation of two AIM bundles related to primary c-section reduction and perinatal substance use via statewide QI learning collaboratives. CPCQC will launch a third statewide AIM bundle learning collaborative launched beginning in 2025.

In the survey, hospitals were asked to rank their levels of interest in topics addressed by AIM bundles and if resources were appropriately allocated to support QI efforts. Specifically, hospitals were asked to score each bundle individually from one to five, with one indicating low readiness and interest and five indicating total readiness and interest.[1] Perinatal mental health conditions ranked the highest followed by sepsis in obstetric care and obstetric hemorrhage. Notably, hospitals expressed high interest in topic areas that their teams are already actively implementing or planning.

| AIM Bundle | Rank | Weighted Average |
|---|---|---|
| Perinatal mental health conditions | 1 | 4.19 |
| Sepsis in obstetric care | 2 | 3.98 |
| Obstetric hemorrhage | 3 | 3.96 |
| Severe hypertension in pregnancy | 4 | 3.71 |
| Postpartum discharge transitions | 5 | 3.65 |
| Cardiac conditions in obstetric care | 6 | 3.48 |

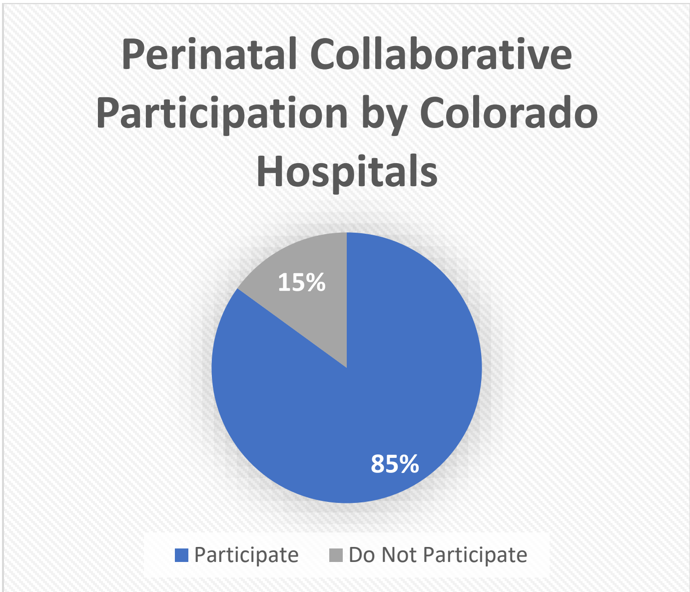
**Key Takeaway:** Surveyed hospitals expressed interest in perinatal mental health conditions, sepsis, and hemorrhage through statewide patient safety bundles, indicating a desire for further improvement even within topic areas cited by hospitals as already prioritized for implementation. There is strong interest in implementing the nationally recognized AIM bundles if resources are available to do so.

[1] It is critically important to note that this survey and report are focused on operational readiness only. While all opportunities for quality and safety improvement are vital, decisions to implement widespread programs must take into account scarcity of resources and the necessity to balance the need and desire to improve programming with the complex and exceptionally busy clinical nature of L&D units. Readers are encouraged to interpret results and analysis through this lens.

## Section 3: Participation in Statewide Perinatal Collaborative Programs

CPCQC is a 501c3 organization aimed at improving the health outcomes of patients giving birth and newborns across Colorado. More than 50 U.S. states and territories have a perinatal quality collaborative as designated by the Centers for Disease Control and Prevention; CPCQC is Colorado's CDC-designated and funded entity for perinatal quality improvement.

In the survey, 85% of L&D units in Colorado reported active participation in CPCQC activities. Hospitals identified several benefits of participating in the statewide perinatal collaborative including quality improvement resources and training, leadership engagement, feedback and technical assistance, and convenings to share best practices. Workforce challenges, including a lack of dedicated time for data submission, were identified as the primary reason that hospitals are unable to meaningfully participate in PQC activities.




**Key Takeaway:** Eighty-five percent of hospitals report participation in QI programs with the state's designated perinatal quality collaborative (PQC). However, data from CPCQC show that 67% of hospitals participate in at least one PQC-led activity. The difference in data illuminates definitional and structural challenges with L&D QI activity.

A multitude of opportunities exist for hospitals to engage in L&D QI programming, including those led by the PQC. Further work is needed to understand gaps in hospital-reported and PQC-reported data, to communicate more effectively on QI activity, and to coordinate and ensure PQC activities and services are valuable beyond the robust QI activities that hospitals implement internally.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## Section 4: Quality Improvement and Patient Safety Resources

When asked what frameworks participating hospitals use to implement maternity quality improvement – such as national programs, "home grown" programs, or some combination – hospitals identified a multitude of resources that hospitals across the state to bolster quality improvement activities and patient safety initiatives. This includes resources from the following organizations:

- The Association of Women's Health, Obstetric and Neonatal Nurses (AWHONN)
- Perinatal Orientation and Education Program (POEP)
- Alliance For Innovation on Maternal Health (AIM)
- Vermont Oxford Network (VON)
- American College of Obstetrics and Gynecology (ACOG)
- California Maternal Quality Care Collaborative (CMQCC)
- Lipincott OnDemand
- Leapfrog Education
- Premier
- Spinning Babies
- STABLE Program

**Key Takeaway:** QI activity in hospitals is informed by a variety of resources. Beyond specific frameworks or resources used, several factors facilitate meaningful QI in hospitals, including engaging multidisciplinary teams, utilizing standardized tools and frameworks, and ensuring staff have dedicated time to perform the work, especially data collection, analysis, and submission. Standardization, and potentially consolidation, may be helpful in maximizing impact and scale across Colorado.

## Section 5: Facilitators and Barriers to L&D Quality Improvement

Hospitals identified several themes around what facilitated the most meaningful and robust quality improvement efforts, including:

- Building and sustaining physician buy-in
- Forming multidisciplinary quality improvement teams including obstetricians, anesthesiologists, maternal fetal medicine specialists, and nurses, among others
- Establishing shared collaborative quality improvement goals that are clearly measurable and achievable
- Implementing a model for quality improvement, such as the plan-do-study-act model
- Providing staff with dedicated time for quality improvement initiatives including data collection/submission
- Sharing experiences across the department through regularly occurring forums

Hospitals also shared enthusiasm for outcomes that they were particularly pleased with. Numerous hospitals celebrated reducing unnecessary c-sections and credited a variety of education and support mechanisms in accomplishing this task, including participation in CPCQC's QI program targeting primary c-sections. Others submitted success stories around reducing unnecessary opioid administrations during the peripartum period, with some success potentially accomplished via participation with the PQC. Several facilities wrote about success with improving multidisciplinary communication to improve patient safety and instituting regular case reviews with department leadership and frontline staff. Finally, several facilities highlighted success in growing the number of patient safety drills and exercises regularly occurring on the L&D unit.

Facilities also provided insight into factors that serve as barriers to better integrating QI initiatives. Most of these responses highlighted challenges related to data and workforce, including:

- Accessing usable and meaningful data from electronic health records
- Having insufficient staff resources to implement QI initiatives effectively and fully
- Grappling with high staff turnover that necessitates re-teaching and renewing QI programming
- Finding time in a busy care environment to both care for high-acuity patients and focus on QI
- Balancing the QI needs of a specific hospital in the context of a broader health system and operating environment
- Navigating community resources and improving social determinants of health outside the walls of the hospital

**Key Takeaways:** A number of challenges exist to growing and sustaining quality improvement work. Workforce challenges, including limited staff time, high turnover, and difficulty engaging all members of the clinical team, are significant factors that impede progress on QI initiatives. Additional challenges include lack of interoperable electronic health record data, barriers to navigating community resources, and the need to balance QI activity with care delivery in dynamic L&D settings.



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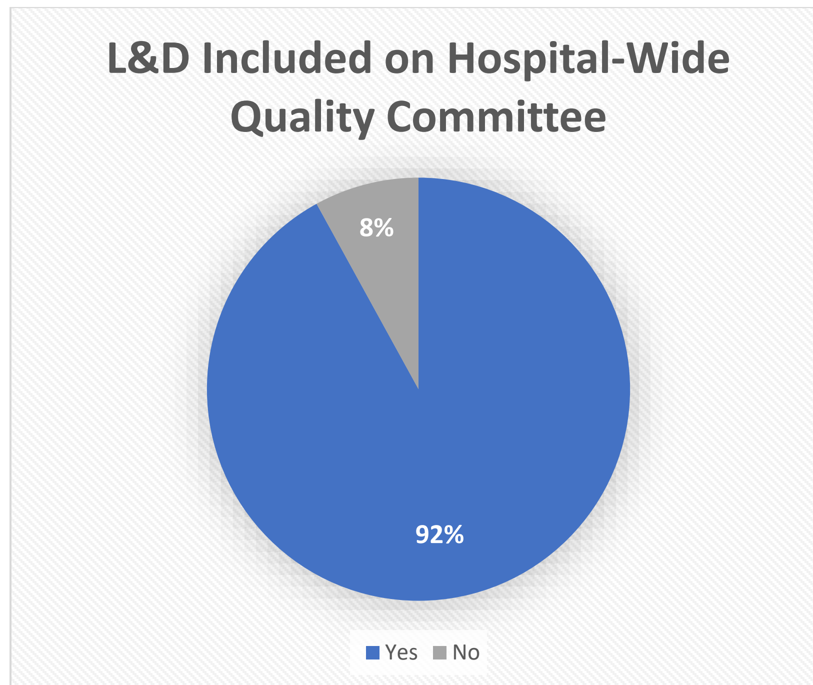
## Section 6: Maternal Health Quality Improvement Infrastructure

More than 90% of hospitals with L&D units include maternal patient safety as part of the hospital-wide quality committee. Sixty-nine percent of hospitals report a quality committee that focuses exclusively on L&D. Hospital-wide and maternity focused quality committees most commonly meet at least once per month.

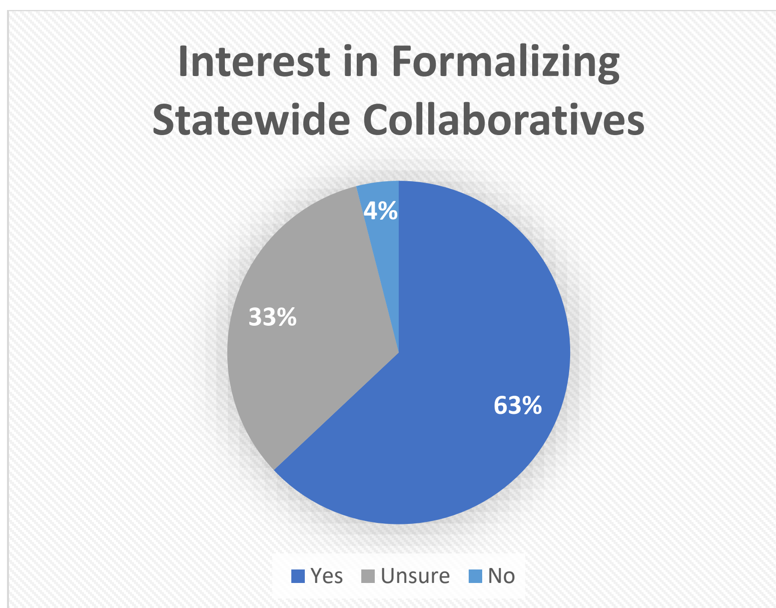



There is wide variation in the roles, professions, and disciplines who represent L&D units on hospital-wide committees, including the following:

- L&D medical director
- L&D nursing director
- Women's services director
- Women and children's quality chair
- Quality coordinator
- L&D quality specialist
- Clinical nursing director
- Nursing director of acute care services
- Chief medical officer
- Chief nursing officer
- Perinatal educator
- Pharmacists

When asked about formalizing statewide quality improvement relationships across topic areas, 63% of hospitals were interested and 33% were unsure. Several themes emerged for what would be most compelling in building cross-state quality improvement, including:

- Defining standardization and agreed upon processes and outcomes measures related to treatment algorithms, follow-ups, etc.
- Focusing on improvement of the most common quality and patient safety issues
- Establishing statewide benchmarks based on meaningful data
- Providing networking opportunities to build robust professional networks
- Offering hybrid options to ensure broad participation given limited travel funds, especially among smaller rural hospitals
- Navigating workforce challenges to ensure engagement is not overly burdensome from a time perspective in the context of also delivering regular patient care
- Describing detailed expectations of roles and responsibilities for those engaged in the collaborative work




**Key Takeaways:** The majority of hospitals are interested in statewide QI collaboration, with a significant percentage (33%) unsure. However, this is in contrast with other data from the survey that suggests 86% of hospitals endorse already participating in PQC activity, the majority of which is conducted in a statewide collaborative fashion.

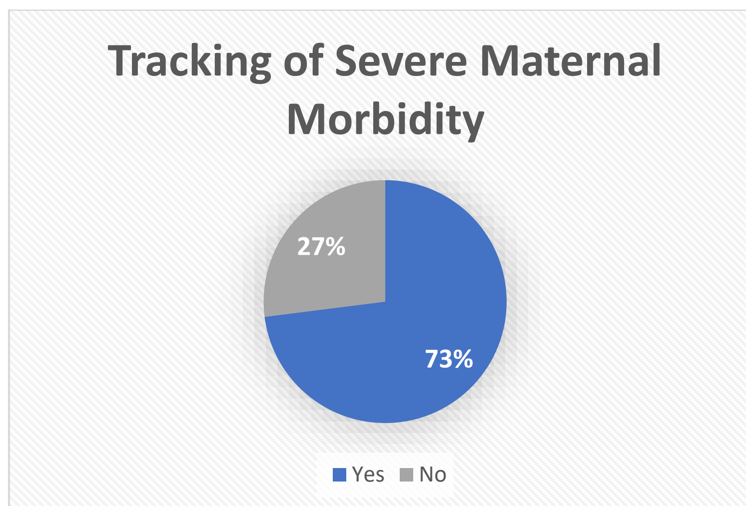
Additional work is needed to highlight benefits of PQC participation and programs that encourage statewide collaboration. The PQC may find benefit in collaborating with hospital industry leaders and key stakeholders to further communicate and raise awareness around potential opportunities, as well as considering the themes cited above as valuable to hospitals when designing statewide quality improvement initiatives.

## Section 7: Severe Maternal Morbidity

Severe maternal morbidity (SMM) encompasses life-threatening complications during pregnancy, childbirth, or postpartum. Tracking SMM data is crucial for public health as it provides insights into maternal health outcomes and health care system performance. Understanding trends and disparities in SMM incidence helps identify areas for improvement in clinical care, resource allocation, and policy development. Additionally, SMM data informs interventions to prevent maternal mortality, enhance maternal health services, and address disparities in access and quality of care. By prioritizing SMM surveillance, public health efforts can effectively mitigate risks, improve outcomes, and safeguard the health of mothers and infants.

More than 70% of hospitals track severe maternal morbidity internally. Hospitals accomplish this in several ways, and many have a dedicated quality dashboard that tracks specific morbidity measures including hemorrhage and avoidable c-section rates. Direct integration of quality improvement and patient safety activity within electronic health records – particularly EPIC dashboards where applicable – is a best practice. Where such integration currently exists, dashboards are reviewed regularly by L&D leadership and at least monthly through a quality and data governance infrastructure, most commonly a formal quality committee as described above.

Unfortunately, these types of integrations can be cost-prohibitive due to the proprietary nature and additional licensing fees required to the electronic health record companies. The high costs related to software and technology integration and robust staff training result in few hospitals, especially smaller and less-resourced facilities, being able to fully capture and use data for quality improvement. In many of these facilities, data extraction is a manual and painstaking process that may result in challenges with data integrity, reliability, and validity inherently found in manual processes.




**Key Takeaway:** Opportunities exist to better integrate severe maternal morbidity, race, ethnicity, and social drivers of health data into quality improvement and hospital governance structures, such as quality committees. Current analyses may be limited by the manual nature of data extraction and challenges related benchmarking against like-facilities.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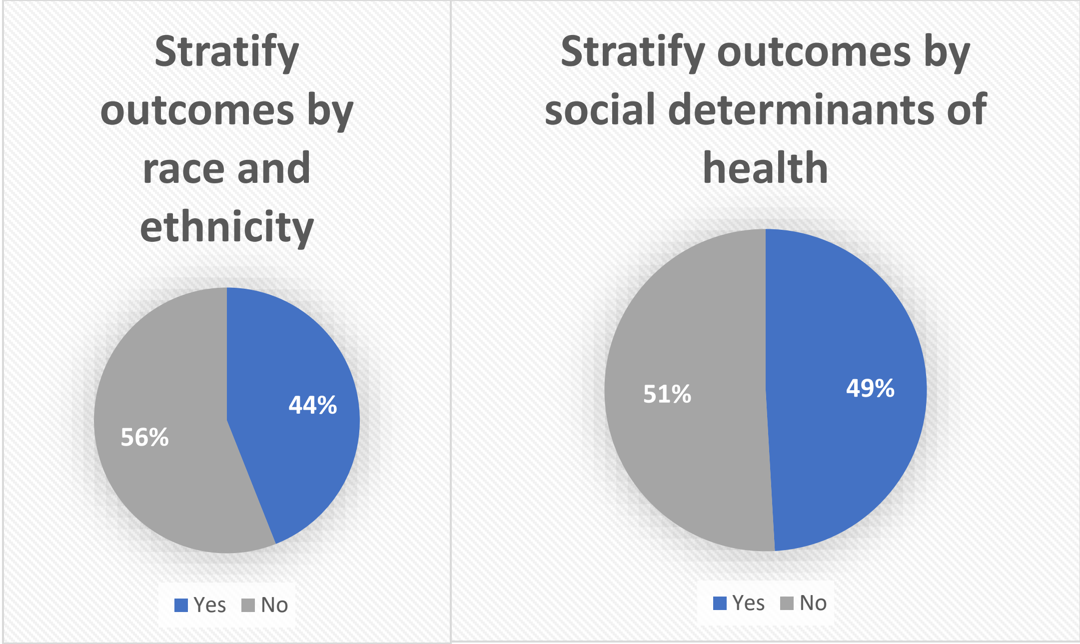
## Section 8: Data Stratification by Race, Ethnicity, and Social Determinants

Approximately 44% of hospitals stratify maternal health data by race and ethnicity, and 54% stratify maternal outcomes through the lens of social determinants of health (SDoH). Hospitals that track SDoH data do so primarily through a universal screening tool. Areas commonly screened for include housing instability, food insecurity, transportation, home utility status, financial status, and intimate partner violence. Some hospitals stratify these results by payer and zip code. Data is reviewed in accordance with quality improvement governance infrastructures, which in most hospitals occurs monthly within multidisciplinary committees.




**Key Takeaways:** While some hospitals do evaluate outcomes by race, ethnicity, and social determinants of health, additional research is needed to understand facilitators and barriers for hospitals that are not regularly engaged in this practice. Further research is also needed to understand how hospitals utilize this data once collected.



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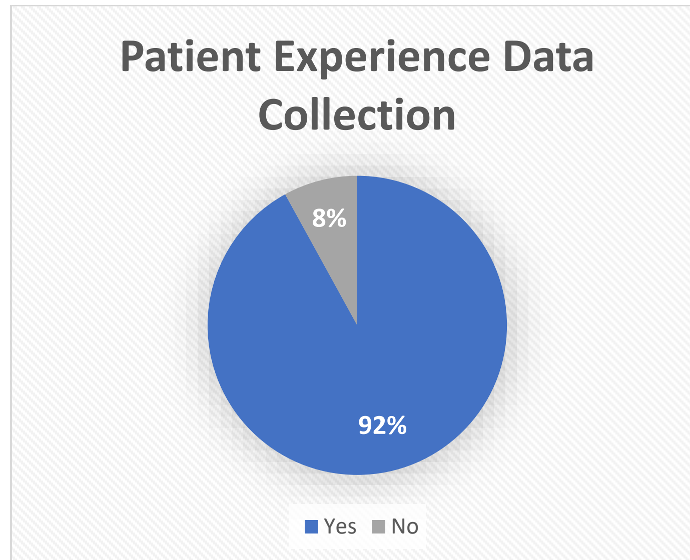
## Section 9: Patient Experience Data

More than 90% of hospitals collect and analyze data related to patient experience during a hospital stay, with many hospitals going above and beyond the Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) survey questions mandated by CMS. Numerous hospitals engage with Press Ganey to amplify questions specific to L&D services and others have implemented custom Qualtrics surveys to promote data collection around patient experience as well.




**Key Takeaway:** The vast majority of L&D units evaluate patient experience data from patients who have received care in their facilities. Additional research is needed to understand how such data is used to inform clinical practice and clinical operations.

## Limitations

The limitation of this survey lies in its exclusion of hospital characteristics (i.e., rural vs. urban, safety net status, share of patients on Medicaid, etc.) that could have provided valuable context for understanding respondents' perspectives. This presents an opportunity for future surveys and discussions with hospitals to understand the differing needs of various facility types. Additionally, the absence of uniform definitions for levels of implementation related to quality improvement initiatives in the L&D units may have led to varying interpretations among participants, potentially modifying the results due to subjective understandings of the terms concerning individual work experiences. Future opportunities or iterative phases of this survey could explore the different understanding of the implementation process between hospital respondents and CPCQC.

## Section 10: Focus Group Findings

As noted in the methodologies, four focus groups were held as part of this data gathering process. The 20 hospital QI professionals who participated elicited the following themes:

1. Among all facility types, the highest interest was expressed for implementation of patient safety bundle initiatives for obstetric hemorrhage and sepsis. When provided a choice between obstetric hemorrhage and postpartum discharge transitions, rural facilities overwhelmingly supported postpartum discharge transitions.
2. While there is a large amount of overlap in the resources available, QI programs, and measure designs, the nuanced nature of each individual program often leads to redundant or duplicative work. Participants noted that alignment is needed across the many state and federal programs focused on improving maternal health outcomes. Lack of alignment across all programs and implementations results in decreased overall effectiveness, increased staff burden, and loss of internal momentum.
3. Most facilities have only one person overseeing QI initiatives in L&D and these individuals often have other responsibilities across the hospital. Several identified a sense of "struggling" to stay on top of the many mandates and reporting tasks and have found it challenging to facilitate meaningful change in this environment.
4. Most facilities use a manual data extraction process, which staff shared is incredibly time consuming and prone to error. Staff rarely have the capacity to do such extractions in a meaningful way. Lack of data interoperability across platforms greatly exacerbates this challenge.
5. Financial constraints, especially among rural L&D units, create significant operational challenges for L&D care, which includes the financial resources needed to implement robust QI endeavors.
6. There is a thirst for quality improvement and patient safety training among L&D professionals. While participants value being in-person together, there was a clear preference that long-term or cohort-modeled programming be facilitated in a virtual environment.
7. Some reported frustration for hospitals being held accountable by state and federal quality programs for situations entirely out of their control. Examples included negative outcomes that occurred after hospital discharge that were unknown or unpredictable during the hospital course, or conditions exacerbated by geography (such as inclement weather preventing a transfer).
8. Maintaining staff competencies is challenging in low volume settings, especially when responding to patients with acute clinical deterioration.
9. Rural facilities expressed interest in measures and QI activities designed specifically for them to accommodate their unique needs and resource constraints.
10. All facility types were interested in having access to greater resources for perinatal mood and anxiety disorders.

## Appendix I

Listed below are examples of quality improvement and patient safety initiatives occurring across Colorado L&D units. QI examples marked with an asterisk represent projects that have accompanying AIM bundles.

**Obstetric Hemorrhage***

Obstetric hemorrhage, also called postpartum hemorrhage, is defined as profound blood loss greater than one liter that occurs after delivery. It is a life-threatening emergency for the patient giving birth and requires immediate intervention in a hospital. Obstetric hemorrhage occurs in up to 3% of all deliveries.

**Severe Hypertension in Pregnancy***

Severe hypertension, or high blood pressure, in pregnancy represents two serious diagnoses including pre-eclampsia and eclampsia. Together, these diagnoses occur in up to 8% of deliveries. If not promptly identified and treated, serious complications and death can occur.

**Magnesium Sulfate Protocols**

Magnesium sulfate is a medication used to treat several conditions during pregnancy, including pre-eclampsia, eclampsia, and pre-term birth. It is an evidence-based and safe medication when used appropriately. QI programs related to this medication ensure its patient-centered and appropriate use.

**Perinatal Depression and Anxiety***

Perinatal depression and anxiety are among the most common conditions seen around the time of birth and up to one year later. Undiagnosed or untreated symptoms can have major impacts on patients, including an increased risk of postpartum depression, preterm birth, suicide, and challenges with infant neurodevelopment.

**Fetal Heart Monitoring**

Fetal heart monitoring on L&D units is a set of techniques and skills utilized to assess the ongoing health of the fetus around the time of delivery. This type of monitoring is helpful in determining if an escalation in care is needed, especially for patients who may have higher risk factors.

**Infant Safe Sleep**

Programs around infant safe sleep establish guidelines and standards for hospitals staff to educate parents about appropriate positioning of infants during sleep. Such initiatives have been shown to reduce the risk of Sudden Infant Death Syndrome (SIDS).

**Postpartum Discharge Planning and Continuity of Care**

This body of work ensures that patients who have given birth have meaningful follow-up care with a provider after hospital discharge. This includes developing and maintaining a referral list for community providers, conducting a comprehensive postpartum visit, and standardizing discharge and post-discharge forms.

**Safety Event Simulation**

Simulating clinician response to medical and surgical emergencies has repeatedly been shown to improve care and outcomes in an emergency on L&D units. Simulations often involve participating in multiple expertly written scenarios including hands-on practical experience.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**Prevention of Retained Vaginal Sponges after Birth**
Sponges are commonly utilized as part of care delivery related to the birthing process. These quality improvement programs are important to avoiding serious complications, such as infection, pelvic pain, and potentially sepsis.

**Safe Reduction of Primary Cesarean Birth**
Unnecessary surgeries increase risks of complications for both the patient giving birth and the newborn, including infections and longer recovery times. Emphasizing vaginal birth and addressing underlying reasons for high c-section rates promote safe childbirth and improve overall health outcomes.

**Naloxone Distribution**
Naloxone is a life-saving medication for patients who have experienced an opioid overdose. Naloxone distribution is a leading public health intervention for responding to overdose. Providing this medication to patients at risk for an overdose at the time of discharge can be a life-saving intervention.

**Maternal Early Warning Signs Protocol**
Identifying early warning signs of potential complications during the peripartum period is crucial to ensuring patients are directed to emergency care. Examples include fevers, difficulty breathing, and chest pain.

**Perinatal Infection Control**
Perinatal infection control is paramount for safeguarding the health of both patients and newborns.

**Support After a Severe Maternal Event**
Supporting a patient after a severe maternal event is crucial for physical and emotional recovery. Providing comprehensive medical care, including monitoring for complications, is essential.

**Maternal Venous Thromboembolism (VTE)**
Improving quality improvement related to maternal VTE includes developing standardized protocols for risk assessment, prophylaxis, management, and treatment.

**Perinatal Substance Use Disorder**
Substance use disorders are among the leading causes of maternal mortality. Quality improvement around this diagnosis includes comprehensive screening protocols and developing referral pathways.

**Medications for Opioid Use Disorder**
Medications for opioid use disorder include buprenorphine, methadone, and extended-release naltrexone. In some circumstances, these life-saving medications may be initiated during hospitalization. Quality improvement related to these medications includes staff education for treatment initiation, patient education on benefits and risks, and referral to community partners for ongoing treatment after discharge.

**Transfer Protocols from Community Birth Settings**
Giving birth at home or at a community birth center may be a safe option for properly screened, low-risk patients. However, establishing relationships with hospitals and protocols for transferring patients to hospitals is critically important.

**Disseminated Intravascular Coagulation**
This relatively uncommon but acute bleeding problem is considered a life-threatening medical emergency. Early identification of the diagnosis and treatment initiation is crucial to obtaining a positive outcome.

**Perinatal Sexually Transmitted Infections**
Sexually transmitted infections may be passed from the patient giving birth to the newborn, including HIV, syphilis, and herpes. Quality improvement initiatives ensure appropriate screening, diagnostic studies, and treatment.

**Peripartum Sepsis and Septic Shock**
Sepsis is a leading cause of in-hospital mortality, including within obstetrics and represents the body's aggressive response to infections. Providing staff education about early identification and treatment, including immediate initiation of antibiotics, is crucial to achieving positive outcomes.

**Fetal Alcohol Spectrum Disorder**
Recognizing risk factors for fetal alcohol spectrum disorder is an important step in identifying patients who would benefit from treatment.

**Diabetic Ketoacidosis (DKA)**
Diabetic ketoacidosis represents a constellation of symptoms and clinical emergencies that can be fatal if not immediately corrected. Due to the physical stress of delivery, identification and treatment of DKA in L&D units is important to support improved outcomes.

**Reduction of Peripartum Racial and Ethnic Disparities**
Reducing peripartum racial and ethnic disparities includes addressing systemic biases and barriers in health care by implementing culturally competent care, enhancing access to prenatal and postpartum services, and promoting diversity among health care providers.

**Cardiac Conditions in Pregnancy***
Certain heart conditions may be exacerbated by pregnancy. Risks associated with these conditions can be mitigated through appropriate screening, patient education, and implementation of evidence-based protocols.


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## Appendix II

Stages of readiness for 25 quality improvement and patient safety topics:

| | Fully implemented | Implementing | Planning to implement | Considering | Not considering |
|---|---|---|---|---|---|
| Cardiac conditions in pregnancy | 17% | 8% | 4% | 19% | 52% |
| Fetal alcohol spectrum disorder | 27% | 6% | 4% | 15% | 48% |
| Diabetic ketoacidosis | 27% | 4% | 2% | 19% | 48% |
| Disseminated intravascular coagulation | 37% | 4% | 2% | 23% | 35% |
| Perinatal sexually transmitted infections | 35% | 6% | 10% | 19% | 31% |
| Maternal venous thromboembolism | 46% | 10% | 12% | 13% | 19% |
| Transfer protocols from community birth settings | 37% | 25% | 10% | 15% | 13% |
| Perinatal infection control | 56% | 15% | 4% | 13% | 12% |
| Prevention of retained vaginal sponges after birth | 73% | 6% | 0% | 10% | 12% |
| Infant safe sleep | 77% | 4% | 2% | 6% | 12% |
| Peripartum sepsis and septic shock | 33% | 29% | 17% | 12% | 10% |
| Reduction in peripartum racial and ethnic disparities | 17% | 40% | 13% | 21% | 8% |
| Support after a severe maternal event | 52% | 25% | 4% | 12% | 8% |
| Magnesium sulfate | 83% | 4% | 2% | 4% | 8% |



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| | Fully implemented | Implementing | Planning to implement | Considering | Not considering |
|---|---|---|---|---|---|
| Medications for opioid use disorder (and other SUDs) | 37% | 37% | 12% | 10% | 6% |
| Naloxone distribution | 60% | 17% | 10% | 8% | 6% |
| Fetal heart monitoring | 77% | 10% | 2% | 6% | 6% |
| Perinatal substance use disorder | 44% | 31% | 10% | 12% | 4% |
| Safety event simulation | 73% | 17% | 2% | 4% | 4% |
| Maternal early warning signs protocol | 60% | 15% | 12% | 10% | 4% |
| Perinatal depression and anxiety | 79% | 13% | 2% | 2% | 4% |
| Postpartum discharge planning and continuity of care | 75% | 13% | 0% | 8% | 4% |
| Safe reduction of primary c-section birth | 65% | 27% | 6% | 0% | 2% |
| Severe hypertension in pregnancy | 85% | 13% | 0% | 2% | 0% |
| Obstetric hemorrhage | 88% | 12% | 0% | 0% | 0% |



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