Best Practices & Events Affecting Cesarean Delivery Rates In California

August 2017

Promoting Optimal NTSV Delivery Rates (PONDR)
Best Practices and Events Affecting Cesarean Delivery Rates In California

Executive Summary

One of every eight babies born in the United States is born in California. Of those births, three in 10 are delivered by cesarean. Overall cesarean delivery rates increased from 5% in 1974 [1] to 38% in 2015 [2] without a corresponding improvement in newborn or infant outcomes. Many California hospitals, big and small, have instituted processes to maintain low cesarean delivery rates[3]. Cesarean deliveries result in longer lengths of stay, increased risks to maternal and fetal health from complications (e.g., infection, hemorrhage, venous thrombosis, uterine rupture, placental adherence, neonatal respiratory problems), as well as higher costs per delivery, than a vaginal birth [2, 3].

There is a statewide effort to promote lower NTSV cesarean deliveries by a number of stakeholders including the California Maternal Quality Care Collaborative (CMQCC), the California Health Care Foundation (CHCF), the Pacific Business Group on Health, and SmartCare California, which is convened by the Integrated Healthcare Association. To understand the practices of rural and community hospitals that have maintained a low cesarean delivery rate, the Hospital Quality Institute (HQI) received a grant from CHCF to study these birthing hospitals and their processes in a project titled, Promoting Optimal NTSV Delivery Rates (PONDR).

The grant had two components with specific aims:

**AIM 1:** To study the practices of rural and community birthing hospitals in California with annual NTSV cesarean delivery rates at or below the Healthy People\(^b\) 2020 target of 23.9%.

**AIM 2:** To analyze perinatal cesarean delivery safety reports in the California Hospital Patient Safety Organization (CHPSO) database.

For Aim 1, the practices identified were evidence-based practices included in the CMQCC Toolkit to Support Vaginal Birth and Decrease Primary Cesareans (CMQCC Toolkit) [4]. The CMQCC Toolkit provides guidance to hospitals and providers to improve education for cesarean reduction, support vaginal births, and manage labor abnormalities. Practices were grouped into categories of Quality and Patient Safety, Training and Competency, Data and Reporting, and Supporting Vaginal Birth. Even with multiple comparisons between groups, there was no evidence of statistically significant practice differences across the 30 hospitals surveyed, all of which had low NTSV cesarean delivery rates in the study period. Our conclusion is that these practices could be instituted by similar hospitals to support vaginal births and decrease their primary cesarean deliveries.

For Aim 2, the primary conclusion from safety report data is that great variation exists in how and why hospital staff submit reports to the CHPSO database. As a Patient Safety Organization, CHPSO member hospitals share report data for purposes of improving patient safety. Of more than 2000 perinatal safety reports reviewed related to cesarean deliveries, nearly 1,700 were unclassifiable. The conclusion postulated was that these submitted safety reports were often used for trending purposes by quality and medical staff rather than to track poor outcomes. Of those safety reports that were able to be classified, the largest number fell into deviation in the standard of care, followed by equipment and interpersonal issues.

This report is presented with recommendations and references that may be considered by all birthing hospitals looking to decrease their NTSV cesarean delivery rate and to develop accurate safety "reporting.

Quick Points

- NTSV (nulliparous, term, singleton, vertex)
  - a woman with a full-term, single baby, first birth, in the head down position
- NTSV cesarean rate
  - the number of cesarean deliveries in the NTSV population divided by all deliveries of the NTSV population
- Primary cesarean rate
  - Numerator: all mothers’ first cesarean delivery (not just a first birth)
  - Denominator: all births
- NTSV rates 2014 vs. 2015
  - The California state average for NTSV cesarean rates in 2014 was 26.1%. In 2015, it was 25.6%. The top ten percent of hospitals had an NTSV cesarean rate of 19% or lower while the bottom ten percent had a rate of 33% or higher.
  - In 2014, 40% of California hospitals met the Healthy People 2020 target rate of ≤23.9% NTSV cesarean deliveries. In 2015, 42% of California hospitals met the target.

\(^{a}\)NTSV Definition: NTSV deliveries meet the following criteria: nulliparous (a mother’s first delivery), term (37 weeks gestation or more), singleton (one baby), and vertex (head first)

\(^{b}\)In 2010, the Department of Health and Human Services established Healthy People 2020, goals set for 10 years under specific topics and objectives. One of the topic areas, Maternal, Infant, and Child Health, includes objective MICH-7, reduce cesarean births among low-risk women.
**Overview of Cesarean Births**

American healthcare costs continue to be significantly greater, as a percentage of GDP, than those of other westernized countries, with arguably poorer outcomes [5]. While great strides have been made in improving quality, decreasing variation, and decreasing costs in the non-pregnant population in the U.S., the area of obstetrics has not seen the same scrutiny as other areas of medicine. This may be because payments for obstetric care have not been aligned with desired outcomes.

Cesarean deliveries are one of the most commonly performed surgical procedures in the U.S. today (1.2 million annually). Rates of cesarean delivery vary widely between different areas of the country, different parts of a state, different hospitals within a town or city, and even within the medical staff of an individual hospital [6, 7].

Overall cesarean delivery rates increased from 5% in 1974 [1] to 38% in 2015 [2] without a corresponding improvement in newborn or infant outcomes. Factors that contributed to the increase in the cesarean delivery rate, most significantly in the first pregnancy, are labor inductions, dystocia* and fetal heart rate abnormalities shown on fetal monitor tracings [3]. Other factors, such as breech, multiple gestations, and prematurity played a smaller role and are less amenable to interventions. Hospitals with higher risk patients will have a higher overall cesarean delivery rate, but restricting the denominator to only low-risk NTSG births removes many high-risk conditions that would drive up their overall cesarean delivery rate. This allows for comparisons of rates between hospitals with different patient risk profiles. As part of The Joint Commission’s (TJC) Perinatal Care core measure set, hospitals began collecting data beginning with April 1, 2010 discharges, so it is only recently that NTSV cesarean deliveries have been reported publicly.

**AIM 1: Survey of Rural and Community Hospitals**

**Background**

Once a woman experiences a cesarean for her first delivery, she will usually continue to have cesarean deliveries for the rest of her births, leaving her and her future children at risk for associated complications (e.g. infection, hemorrhage, venous thrombosis, uterine rupture, placental adherence, neonatal respiratory problems). Cesarean deliveries result in longer lengths of stay, as well as higher costs per delivery, than a vaginal birth. Because half of all cesarean births occur to first time mothers, the reduction of NTSV cesarean delivery rates can have long-term benefits for current as well as potential future deliveries. For this reason, the consensus by many reporting groups (TJC, Leapfrog, and National Quality Forum) is to use the NTSV cesarean delivery rate as the best measure of cesarean delivery, as this rate is partially risk-adjusted and generally comparable among hospitals.

Establishment of hospital quality initiatives for the reduction of NTSV cesarean delivery rates that encompass strong medical, nursing and administrative leadership, dedicated resources, evidence-based practices, and accurate data have all been shown to reduce NTSV cesarean delivery rates [8, 9]. Techniques that minimize interventions and have high rates of patient satisfaction have been identified and should be available for low-risk women having a spontaneous labor [2]. Many of these practices – including doulas/constant labor support, delayed hospital admission until more than three centimeters cervical dilation [10], hydrotherapy during labor, intermittent auscultation of the fetal heart rate, and ambulation/frequent position changes – have been shown to support vaginal births [2, 4].

In its Healthy People Initiative, the U.S. Department of Health and Human Services establishes decade-long public health goals on a range of topics. The topic area of Maternal, Infant and Child Health includes reducing cesarean births among low-risk women (MICH-7). Healthy People 2010 set an NTSV cesarean delivery target rate of 15%. However, the 2007 NTSV cesarean delivery rate of 26.5% led to an adjusted target of 23.9% for 2020 (a 10% relative decrease from the 2007 rate). As of this printing, hospitals have less than two and one-half years to achieve this target.

In California, there continues to be wide variation between hospitals, with 2015 NTSV cesarean delivery rates ranging from 11.1% to 76.9%. In addition, there is variation among providers within hospital departments, which is often unknown until identified using accurate provider-level data. CMQCC’s Maternal Data Center (MDC) was established to allow hospitals to generate accurate quality measure data, individual provider rates, patient length of stay and other defined measures. The MDC provides an online tool that generates rapid-cycle performance metrics to support quality improvement activities and service-line management for both clinicians and administrators.

The Elimination of Non-medically Indicated (Elective) Deliveries before 39 Weeks Gestational Age Quality Improvement Toolkit [11] has been widely adapted across California and has been a driver in the reduction of NTSV cesarean delivery rates. The Toolkit to Support Vaginal Birth and Reduce Primary Cesareans was released by CMQCC in April, 2016 with the intent to assist hospitals with their quality initiatives to reduce NTSV cesarean delivery rates.

The Elective Inductions Less than 39 Weeks rate and the NTSV Cesarean Delivery rate have become two TJC Perinatal Care core measures. Currently, all TJC-accredited hospitals with more than 300 births per year must report data about these measures. Reporting to TJC, along with the public distribution of hospital NTSV cesarean delivery rates through CalHospitalCompare.org, have focused the attention of providers, hospitals, and payers on this important measure of maternal and newborn health.

*Abnormal labor due to maternal or fetal conditions.
A survey of hospitals in Connecticut and Massachusetts identified practices, such as those that minimize interventions (e.g., midwives, no IV in labor, eating during labor) that appear to support vaginal births and reduce the cesarean delivery rate [12]. Another survey has shown wide variation in childbirth services within California, with community hospitals more apt to have for-profit ownership, be in a rural or isolated location and have fewer annual deliveries per hospital [13].

While previous studies have looked at hospitals within a state and/or system [10, 14] none have focused on practices of rural or community hospitals that met the Healthy People 2020 target rate of ≤23.9% NTSV cesarean deliveries by 2015. In the survey described here (Promoting Optimal NTSV Delivery Rates or PONDR), our aim was to assess which of the evidence based practices defined by the CMQCC Toolkit to Support Vaginal Birth and Reduce Primary Cesareans [4] were utilized by rural and community hospitals that met the Healthy People 2020 target.

**Participating Hospital Locations (n=30)**

![Map of Hospital Locations](image)

**Methods**

We identified 36 rural and community hospitals that met the Healthy People 2020 target of ≤23.9% NTSV cesarean deliveries in 2014, 2015, or both years. The survey was conducted between October and December, 2016. Of our final pool of 36 hospitals, 30 completed the survey (response rate: 83.3%). Five had NTSV cesarean delivery rates of ≤23.9% in 2014, six in 2015, and 19 in both years.

The target hospitals for the survey were rural as designated by the California Hospital Association (CHA) and/or small-sized hospitals within California. To reach our target of at least 20 hospitals, we expanded the survey sample to include some medium-sized, non-rural hospitals. Within this larger sample of 30, 19 hospitals met the CHA rural designation and 11 were non-rural. In addition, 19 hospitals had a bed size of less than 100, small-sized as designated by the American Hospital Association (AHA), while the remaining 11 hospitals’ bed sizes ranged from 100 to 205 beds (qualifying as medium-sized as designated by AHA). Fourteen hospitals included in the survey were both rural and small-sized.

The survey questions and topic areas were developed using information from CMQCC’s Toolkit to Support Vaginal Birth and Reduce Primary Cesareans as well as the clinical experiences of our research team. After the initial development, the survey was sent to expert reviewers (medical, nursing and patient safety experts) and then revised with questions added, removed and refined. The final survey included demographic information and questions about hospital status, unit structure, provider/nurse staffing, and labor and delivery practices. In addition, we asked questions regarding practices in the areas of quality and patient safety, training and competency, data and reporting, and support for vaginal birth (see Appendix). Finally, we asked each hospital to select two of eight phrases that best described its unit’s maternity care.

We stratified the respondents into the following categories to see if there were any meaningful differences in their responses: rural vs. non-rural, small vs. medium, system vs. independent, hospitals that met the Healthy People 2020 target in 2014 vs. 2015, hospitals that met the target in both years vs. one year, hospitals that had accurate vs. inaccurate self-reported NTSV cesarean delivery rates.

**NTSV C/S Rates By Hospital and Rural / Non-Rural Status**

![Bar Chart](image)
Findings and Recommendations

The following includes the major findings from the survey as well as our recommendations for actions that can be taken by similar facilities. Other hospitals may also find these findings and recommendations helpful in their journey to reduce NTSV cesarean deliveries.

a) The CMQCC Toolkit to Support Vaginal Birth and Reduce Primary Cesareans

Finding: Even though it was only made available April 2016, the CMQCC Toolkit to Support Vaginal Birth and Reduce Primary Cesareans had already been widely read and used by the surveyed hospitals. At the time of the survey, 25 of 30 respondents indicated that they had read the CMQCC Toolkit, and 15 of 25 had used it to change their unit practices to support vaginal births.

Recommendation: Hospitals that want to decrease their NTSV cesarean delivery rate should download and read the CMQCC Toolkit (available for free) and identify practices and strategies that they can implement.

b) OB Department Awareness of NTSV Cesarean Delivery Rate

Finding: Only seven of 30 respondents were able to provide an accurate 2015 NTSV cesarean delivery rate for their units. Ten did not report accurate 2015 NTSV cesarean delivery rates (with accurate rates defined as falling within 1.5% + or – of the Cal Hospital Compare publicly posted rates), and 13 cited their rates as unknown. This inaccuracy is concerning as 13 hospitals collect provider-specific NTSV cesarean delivery data and 12 share it with their medical staff, nine with their administrative staff, and 11 with their quality staff.

Recommendation: To provide a baseline measure for any NTSV quality improvement process, all OB managers and hospital quality/administrative staff should become familiar with the ACOG and TJC definitions of NTSV cesarean delivery rate, including its calculation, and reference their hospital’s publicly reported NTSV cesarean delivery rate.

Finding: Seven of 30 OB units collect their NTSV cesarean delivery data from delivery log books while 11 of 30 obtain their rate from their Quality Department. Only four of the OB units obtained their NTSV cesarean delivery data from CMQCC’s MDC reporting system, which is aligned with Cal Hospital Compare data. Some hospitals may have joined CMQCC MDC and are reporting their data to the MDC but have not been trained in how to retrieve and utilize their data for multidisciplinary learning or change processes.

Recommendation: OB managers should determine if their hospital is reporting OB data to MDC. If so, they should have their OB staff request training from CMQCC MDC on how to retrieve their accurate hospital and provider birth data. In addition, or alternatively, they should ask for a demonstration from CMQCC MDC for the hospital’s clinical, quality, and administrative staff to help them understand the value of accurate, coordinated data about the unit’s deliveries and provider-specific data (contact information is listed in the Learning Opportunities and Resources section).

d) Survey Response Analysis

Finding: Data on the hospitals that met the Healthy People 2020 target were compared between rural/non-rural, system/independent, and small/medium-sized hospitals as well as between hospitals with accurate/inaccurate 2015 NTSV cesarean delivery rates. In all, the comparisons revealed very few statistically significant differences in practices. The finding that was of importance, however, was that all of the hospitals employed many of the practices recommended in the CMQCC Toolkit. This was expected, given that these were hospitals that had already met the Healthy People 2020 target.

Recommendation: Hospitals similar to those included in the survey should be able to reduce their NTSV cesarean delivery rates with consistent use of the same CMQCC Toolkit practices. Other hospitals that desire to decrease the NTSV cesarean delivery rates may also benefit from implementation of these evidence-based practices.

e) Doula Services

Finding: Nineteen of 30 hospitals had doulas working in their units to support patients in labor. All 19 had patient contracted doulas, while four of 19 also had community-trained doulas. One had a hospital-supported doula service allowing access to doula support during labor for all patients, regardless of their ability to pay.

Recommendation: Hospitals are encouraged to consider development of a hospital-supported volunteer doula service so that all patients have access to labor support that has been shown to decrease NTSV cesarean deliveries [15].

f) Labor Support Training and Practices

Finding: Twenty-five of 30 hospitals had trained their nurses in labor support practices that have been shown to support vaginal births. These 25 hospitals used many methods for the training, with 18 using a didactic program, 17 using preceptor training, 10 having staff attend childbirth education classes, and 4 holding labor support simulations. Only two of the 25 offered observation of a doula providing labor support as a training option.

Recommendation: All OB nurses should be trained in labor support as part of their orientation and competencies. If possible, the training should include childbirth classes and doula interactions as components of these trainings.
g) Admission to Labor and Delivery

**Finding:** There was little standardization of admission criteria within the survey cohort, with two hospitals routinely admitting NTSV patients at less than or equal to 3 cm dilation and seven hospitals using 4-5 cm as their standard admission criteria. Twenty-one stated that their admission standard depended on individual provider decisions and orders.

**Recommendation:** All hospitals should implement written policies that establish criteria for labor admission versus continued observation of labor status and/or discharge home. Admission in early labor (less than or equal to 3 cm) is associated with a higher risk of cesarean delivery [4].

h) Active Labor

**Finding:** Twenty-seven of the 30 hospitals had an active labor definition of 4 cm or greater, with two hospitals using 5 cm and 13 hospitals using 6 cm as their active labor standard definition.

**Recommendation:** All hospitals should define 6 cm as the threshold for the active phase of labor for most women in labor [3]. Before 6 cm of dilation is achieved, standards of active phase progress should not be applied.

i) Maternity Care Descriptors

**Finding:** For the choice of two phrases that best describe their maternity care, most of the respondents chose “Patient and Family Centered” (21 of 30), “Evidence-Based Practice” (15 of 30), or “Birth as a Normal Process” (14 of 30). None of the hospitals selected “Cost Effective” or “Advanced Technology” as the major descriptor of their maternity care.

**Recommendation:** The OB unit’s self-identified descriptors should be communicated and promoted to administrators, staff, patients, and the community. All stakeholders should integrate and consistently promote the OB unit’s values and practices.

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### Phrases that Best Describe the Unit’s Practice (n=30)

<table>
<thead>
<tr>
<th>Phrase</th>
<th># Selected</th>
</tr>
</thead>
<tbody>
<tr>
<td>Advanced technology</td>
<td>0</td>
</tr>
<tr>
<td>Birth as a normal process</td>
<td>14</td>
</tr>
<tr>
<td>Collaborative and multidisciplinary</td>
<td>4</td>
</tr>
<tr>
<td>Community resource</td>
<td>1</td>
</tr>
<tr>
<td>Cost-effective</td>
<td>0</td>
</tr>
<tr>
<td>Evidence-based practice</td>
<td>15</td>
</tr>
<tr>
<td>Patient and family-centered</td>
<td>21</td>
</tr>
<tr>
<td>Quality and outcome driven</td>
<td>5</td>
</tr>
</tbody>
</table>

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### AIM 2: CHPSO Perinatal Safety Reports

**Background**

Patient Safety Organizations, or PSOs, were established under the Patient Safety and Quality Improvement Act of 2005 and created in 2008 by the Agency for Healthcare Research and Quality (AHRQ). Their aims are to collect standardized information nationwide, develop voluntary reporting, extend peer review protections to data related to safety and quality improvement, and develop a culture of safety.

The California Hospital Patient Safety Organization, now called CHPSO, is one of the largest federally listed PSOs in the nation. Federally listed PSOs such as CHPSO receive safety reports from hospitals in exchange for the federal privilege, Patient Safety Work Product, whereby safety reports submitted to the PSO cannot be subpoenaed or be discoverable. In exchange for this privilege, CHPSO’s role is to develop trends and provide analyses to member organizations. Since 2012, CHPSO has received more than 34,000 perinatal safety reports that are stored in a database of over 1.3 million reports. These safety reports are submitted to CHPSO electronically and voluntarily from member hospitals, over 80% of which are based in California.

The safety reports, which vary from hospital to hospital, include five required fields: event ID, event date, event category, severity level, and event description. The event description is one of the most important pieces of the report because it includes a narrative of the situation and, occasionally, a resolution. The severity scale ranges from unsafe conditions to deaths.

**Methods**

A perinatology team leader, supported by nursing and patient safety leaders, reviewed 2,000 cases associated with CHPSO perinatal safety reports. The safety report submissions were dated from January 2013 to January 2017. We defined the following categories based on natural groupings of the reports during the review that resulted in a near miss, patient harm or patient safety report trends:

- **Communication** – Ineffective and/or insufficient communication resulted in the report being generated.
- **Deviation from standard of care** – The provider did not follow the unit’s standard protocols.
- **Equipment, devices, systems, electronic health record (EHR)** – Safety reports included failure of devices and EHR or the provider/staff did not use the device properly.
- **Interpersonal** – Lack of team-promoting behavior by providers and/or staff.
- **Medication errors** – Deviation from the five rights: right drug, right patient, right dose, right route, right time.
- **Patient issues** – Patient behavior or refusal of recommended treatment.
- **Uncategorized or Other** – Reports in the “Other” category were those that did not fit into one of the above categories.
**Results**

Safety reports were extracted from the CHPSO database from the perinatal category. The following keywords were used to access as many cesarean section safety reports as possible and they yielded the corresponding number of unique reports:

**Number of Safety Reports Returned from the CHPSO Database by Keyword(s)**

<table>
<thead>
<tr>
<th>Keyword(s)</th>
<th>Number of Reports</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gravida</td>
<td>215</td>
</tr>
<tr>
<td>G1P1 or G1P0†</td>
<td>475</td>
</tr>
<tr>
<td>C-S</td>
<td>1,683</td>
</tr>
<tr>
<td>C Section</td>
<td>4,904</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>7,277</strong></td>
</tr>
</tbody>
</table>

Overall, the safety reports varied greatly in frequency and indications. Nursing staff reported the vast majority of perinatal cases with occasional physician-generated safety reports. This is not unusual, as nurses have instructions to complete safety reports for a variety of situations, in order for the quality and medical staff to trend cases with potential for poor outcomes. For physician-generated safety reports, the narrative description usually referenced poor interactions between providers and nursing staff, or that the nursing staff was inadequate for the patient volume, resulting in an unsafe environment (with or without a bad outcome).

The nurse-generated safety reports also varied widely from hospital to hospital, with staff reporting a cesarean delivery that fell outside of the NTSV case definition (e.g., breech, labor dystocia) but led to a cesarean delivery. In many cases, these deliveries appeared to be appropriate but were created for quality review. Nurses also reported interpersonal issues between members of the medical and hospital staff whether there was a poor outcome or a near miss.

### Number of Cases by Report Type

<table>
<thead>
<tr>
<th>Report Type</th>
<th>Number of Reports (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communication</td>
<td>51 (2.6%)</td>
</tr>
<tr>
<td>Deviation from standard of care</td>
<td>92 (4.6%)</td>
</tr>
<tr>
<td>Equipment, devices, systems EHR</td>
<td>58 (2.9%)</td>
</tr>
<tr>
<td>Interpersonal</td>
<td>55 (2.8%)</td>
</tr>
<tr>
<td>Medication errors</td>
<td>19 (1.0%)</td>
</tr>
<tr>
<td>Patient issues</td>
<td>41 (2.1%)</td>
</tr>
<tr>
<td>Uncategorized, Other</td>
<td>1684 (86.7%)</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>2000 (100.0%)</strong></td>
</tr>
</tbody>
</table>

Examples of safety reports by type, many of which might have had an impact upon a hospital’s cesarean section rate, include the following:

- **Communication**
  - The physician took the patient to the OR for a cesarean delivery without telling the nurse or anesthesiologist and the OR was needed for another patient.
  - A cesarean delivery was required for fetal indications, however, the NICU was not notified and the newborn resuscitation warmer was not set up.

- **Deviation from the standard of care**
  - A patient presented to the hospital with a fetal demise. The patient had been sent home four days earlier with a 6/10 BPP (biophysical profile).
  - A physician admitted a patient for a cesarean delivery for macrosomia with no supporting information. The baby was delivered by cesarean weighing 7 lbs., 6 oz.

- **Equipment Issues**
  - A patient with a cesarean delivery had an order for Percocet as needed. The nurse had difficulty opening the in-unit medication dispenser, and there was a delay in administering the drug to the patient.
  - The physician requested a vacuum or forceps. Neither were available in the unit.

- **Interpersonal**
  - The delivering physician refused to have the laborist on-call scrub with him & performed the cesarean delivery on his own.
  - Two physicians refused to wait for the other to perform a non-emergent cesarean delivery so one was moved to the main OR.

- **Medication Errors**
  - Oxytocin infusion insert opened up wide in error to give a fluid bolus for an epidural.
  - Misoprostol was administered for induction of a TOLAC (trial of labor after cesarean).

- **Patient Issues**
  - The patient left AMA (against medical advice) because she wanted a VBAC (vaginal birth after cesarean) and the hospital didn’t offer it.
  - The patient refused a cesarean delivery in spite of fetal distress. The patient eventually had a cesarean delivery but with a poor outcome.

- **Uncategorized, Other**
  - The patient had a cesarean delivery for active phase arrest.
  - At 36 weeks, a patient’s baby was delivered by cesarean due to anomalies found on the ultrasound. The baby was transferred to the NICU.

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†Gravida (G) refers to the number of pregnancies, Para (P) refers to the number of live births. G1P0 refers to a woman who is on her first pregnancy and yet to deliver. G1P1 refers to a woman who is pregnant and had one previous birth.
Findings and Recommendations
The following includes major findings from the CHPSO perinatal data review as well as our recommendations for improving the value of patient safety reporting. All hospitals should find them helpful for improving patient safety and identifying their safety risk profiles.

a) Hospital safety report narratives
Finding: It was often difficult to classify a safety report’s major issue or category. In some cases, the safety report may have been written to track trends of potential perinatal safety risk cases. Little information was provided in many narratives from which to deduce the reasons for submitting the safety report. The absence of these details became a missed opportunity to learn and improve maternity care.

Recommendation: Use of a standardized format or the Agency for Healthcare Research and Quality (AHRQ) Perinatal Safety Event Report form[16] would enhance the learning from these safety reports. Use of a brief SBAR® format in the narrative would improve identification of trends.

b) Issues addressed in the CMQCC Toolkit to Support Vaginal Birth and Reduce Primary Cesareans
Finding: Multiple safety reports concerned inadequate trials of labor or inadequate length of induction before the NTSV cesarean delivery was performed.

Recommendation: Implementation of labor processes outlined in the CMQCC Toolkit could deal with these labor management issues and possibly lower the NTSV cesarean delivery rate.

c) Communication among all healthcare providers
Finding: Communication breakdown contributed to an increase of unfavorable outcomes among providers, staff and patients. Poor communication continues to be a major patient safety risk factor.

Recommendation: Improving communication among all healthcare providers—including nurse to nurse, nurse to physician, and physician to physician—would help prevent bad outcomes by improving the culture and environment as described in the CMQCC toolkit.

d) Protocols for patient admission
Finding: Lack of standardized criteria for patient admission or inductions less than 39 weeks contributed to some hospitals’ cesarean patient safety reports.

Recommendation: All hospitals should develop standardized unit criteria for patient admission and inductions less than 39 weeks. Having a hard stop for scheduling elective inductions or cesarean delivery less than 39 weeks gestation would lower NTSV cesarean delivery rates.

e) Prevention of recurrent genital Herpes Simplex Virus (HSV) infection
Finding: Providers’ treatment practices varied for mothers who had a history of HSV infection.

Recommendation: Prescribing acyclovir for women with known HSV infection regardless of whether she has frequent outbreaks could prevent many cesarean deliveries performed for HSV outbreak, that would also reassure all providers that the fetus/newborn has been treated adequately if there is a question of an outbreak.

f) Oxytocin protocols
Finding: Safety reports indicate oxytocin was utilized outside protocols and resulted in unnecessary cesareans births.

Recommendations: With its wide use for inductions and augmentation, oxytocin may cause significant maternal and fetal side effects. Establishment and use of oxytocin protocols, including independent double checks with initiation of the medication, should prevent inadvertent overuse and underuse of oxytocin, and prevent bolus injections of this high-risk medication.

Learning Opportunities and Resources
- CMQCC Toolkit to Support Vaginal Birth and Reduce Primary Cesareans
  - CMQCC developed an evidence-based “how-to” guide designed to educate and motivate maternity clinicians to apply best practices for supporting vaginal birth.
  - The Toolkit is free and can be downloaded at: [www.cmqcc.org/VBirthToolkitResource](http://www.cmqcc.org/VBirthToolkitResource)
- CMQCC Collaborative
  - CMQCC has a Collaborative to Support Vaginal Birth and Reduce Primary Cesareans.
  - If your California hospital has an NTSV rate greater than 23.9 percent and are not currently participating but would like to, please send an email to info@cmqcc.org
- Speakers Bureau
  - Mentoring teams consisting of one obstetrician and one labor and delivery nurse, and a certified nurse midwife when appropriate, will work with each hospital.
  - Criteria include:
    - California hospitals with an NTSV CS rate
    - Independent hospital (not system-based)
    - Not participating in the CMQCC Collaborative to Support Vaginal Birth and Reduce Primary Cesareans
  - Please contact Michelle Clark, District IX Program Manager, at mclark@acog.org to enroll your hospital in the program.
Conclusion from the Survey and the Safety Report Analysis

Overall, California has made great strides in reducing the NTSV cesarean delivery rate. For many birthing hospitals, reducing this rate has been a priority in their OB and Quality departments. The information gathered from rural and community hospitals of the PONDOR survey may be applicable to larger and urban hospitals. We recommend that all birthing hospitals review the CMQCC Toolkit to Support Vaginal Birth and Reduce Primary Cesareans and consider prioritizing elements of the practices to be implemented within their OB departments. We also recommend hospital OB departments assess their current methods in retrieving their NTSV cesarean delivery rate. If their internal data varies from publicly reported data, hospitals can contact HQI or CMQCC for more details on obtaining the reported rate. A further study, however, would be useful in understanding the practices of hospitals that did not meet the Healthy People 2020 target of ≤23.9% cesarean deliveries. It is then that a comparison might be drawn between these hospitals and the ones in the PONDR survey.

As for the perinatal safety report data, each safety report is valuable despite the variation in narrative descriptions. While it would be very helpful to have a narrative in the vein of an SBAR, a majority of the safety reports were not completed using that method. It is unclear if these details were in non-mapped fields of the hospital’s safety reporting system, thus not submitted to CHPSO. An increasing number of hospitals are beginning to share their non-harm events and near misses. There is a lot of value in these report types for tracking and trending, as they can illustrate current safety risks that expose patients to potential harms.

Many safety reports involve items that the hospitals purchase such as medications, equipment, and electronic devices. These events are inevitable especially with ever-changing technology operated by humans. Sharing lessons learned with hospital staff and improving communication will minimize patient harm.

Hospitals have less than two and half years to meet the Healthy People 2020 NTSV cesarean delivery target nationwide. Those groups working in birthing hospitals towards meeting this target can follow the recommendations in this report.

About the Hospital Quality Institute (HQI) and CHPSO

HQI (www.hqinstitute.org) was established in April 2013 to realize statewide impact of improving patient safety and quality care for all Californians, to accelerate the rate of improvement, and to advance California as a national leader in quality performance. As a division of the Hospital Quality Institute, California Hospital Patient Safety Organization (www.chpso.org), now CHPSO, is one of the first and largest federally listed PSOs in the nation. CHPSO receives voluntary safety reports from healthcare organizations. The CHPSO database currently includes 1.3 million safety reports. CHPSO and HQI were formed by the California Hospital Association and the three regional associations in California: the Hospital Council of Northern and Central California, the Hospital Association of Southern California, and the Hospital Association of San Diego and Imperial Counties.

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might have had an impact upon a hospital’s cesarean delivery rates. Examples of safety reports by type, many of which were submitted to the California Maternal Quality Care Collaborative (CMQCC). Published January 18, 2017. www.cmqcc.org/VBirthToolkit


11. Main E, Oshiro B, Chagolla B, Bingham D, Dang-Kilduff L, and Kowalewski L. Elimination of non-medically indicated (elective) deliveries before 39 weeks gestational age. (California Maternal Quality Care Collaborative Toolkit to Transform Maternity Care) Developed under contract #08-85012 with the California Department of Public Health; Maternal, Child and Adolescent Health Division; First edition published by March of Dimes, July 2010.


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- George L. Mee Memorial Hospital
- Lodi Health
- Lompoc Valley Medical Center
- Mad River Community Hospital
- Mammoth Hospital
- Marshall Medical Center
- Mercy Hospital of Folsom
- Mercy Medical Center Mount Shasta
- Montclair Hospital Medical Center
- Palo Verde Hospital
- Petaluma Valley Hospital
- Plumas District Hospital
- Queen of the Valley Medical Center
- Redwood Memorial Hospital
- Santa Paula Hospital
- Sierra Nevada Memorial Hospital
- Sonoma Valley Hospital
- St. Elizabeth Community Hospital
- Sutter Davis
- Sutter Lakeside
- Tahoe Forest Hospital District
- Twin Cities Community Hospital
- Ukiah Valley Medical Center
- as well as those who have not decided or who wish to remain anonymous.
Appendix

### Quality and Patient Safety Practices (n=30)

- Unit has a scope of practice policy to identify patients needing transport to ICU:
  - Yes: 80%
  - No: 20%
  - Unsure: 0%

- Decreasing NTSV is a quality initiative:
  - Yes: 60%
  - No: 40%
  - Unsure: 0%

- Unit has a defined CNM, FP and OB patient care mgmt criteria:
  - Yes: 80%
  - No: 20%
  - Unsure: 0%

- Unit has a <39 wk gestation elective delivery protocol:
  - Yes: 80%
  - No: 20%
  - Unsure: 0%

### Training and Competency Practices (n=30)

- Nurses are required to attend classes and demonstrate EFM:
  - Yes: 100%
  - No: 0%
  - Unsure: 0%

- Providers need to demonstrate EFM competency for:
  - Yes: 80%
  - No: 20%
  - Unsure: 0%

- Nurses and providers attend EFM classes and/or strip reviews:
  - Yes: 60%
  - No: 40%
  - Unsure: 0%

- Emergency drills are held at least every 6 months:
  - Yes: 100%
  - No: 0%
  - Unsure: 0%

### Data and Reporting Practices (n=30)

- NTSV C/S are reported to The Joint Commission:
  - Yes: 100%
  - No: 0%
  - Unsure: 0%

- Provider-specific NTSV C/S data is collected:
  - Yes: 80%
  - No: 20%
  - Unsure: 0%

- <39 wk delivery rate reported to The Joint Commission:
  - Yes: 60%
  - No: 40%
  - Unsure: 0%

- All elective <39 wk deliveries are sent to peer review:
  - Yes: 100%
  - No: 0%
  - Unsure: 0%
Appendix

Supporting Vaginal Births Practices

- Unit uses peanut balls or other birthing balls: 80% Yes, 20% No, 0% Per Provider Order
- Unit offers intermittent fetal monitoring: 90% Yes, 10% No, 0% Per Provider Order
- Unit has time frame for patient disposition: 70% Yes, 30% No, 0% Per Provider Order
- Therapeutic rest for prodromal labor: 85% Yes, 15% No, 0% Per Provider Order
- Perinatal consults obtained by phone only: 95% Yes, 5% No, 0% Per Provider Order
- Nurses are trained in labor support: 90% Yes, 10% No, 0% Per Provider Order
- Hydrotherapy resources (water labors/water births): 95% Yes, 5% No, 0% Per Provider Order
- Doulas present on unit: 100% Yes, 0% No, 0% Per Provider Order
- Admission defined as >3cm dilation: 0% Yes, 90% No, 10% Per Provider Order
- Active labor defined as 6cm dilation: 0% Yes, 100% No, 0% Per Provider Order

Legend:
- No
- Yes
- Per Provider Order