

Maternity Baseline Assessment Tool

# Introduction

The High-Value Maternity Network (HVMN) is a solution designed to improve maternal quality outcomes and experience, reduce health disparities and promote health equity. But to measure the impact of an HVMN (or *any* maternity program for that matter), the first imperative is to measure maternal population health outcomes at baseline. This *Maternal Outcomes Baseline Assessment Tool* is designed to illustrate the current cost of care and quality outcomes for all relevant plan participants and for sub-populations at higher risk of adverse outcomes. The *Maternal Outcomes Baseline Assessment* *Tool* provides the most salient cost, utilization and care quality measures that reveal how the purchaser’s population currently fares compared to state averages and national standards of care. This Excel-based tool will summarize plan participant outcomes and highlight where the purchaser has the greatest potential for improvement.

By using this tool, purchasers will gain insight into the following aspects of maternity care outcomes prior to launching the High Value Maternity Network:

* Number of births
* Total cost of maternity care
* C-Section rate, relative to national averages
* Episiotomy rate
* Severe maternal morbidity rate
* Disparities in care outcomes across racial and ethnic groups
* Disparities in care outcomes stratified by maternal age
* Disparities in C-section rate by health system
* Disparities in SMM rate by health system
* Cost differences by health system



## How to Use this Tool

## Overview of the Assessment Tool

The *Maternal* *Outcomes Baseline Assessment Tool* includes an instructions tab plus three data worksheets to help purchasers understand outcomes of maternity care prior to any intervention:

1. Instructions tab: detailed instructions on how to populate the tool, and how to identify relevant claims data using ICD-10 codes
2. Maternal Health Baseline Rates: Calculate rates for Severe Maternal Morbidity (SMM) by type, episiotomy rate, and overall Cesarean Section (C-Section) rate for purchaser’s entire population; compare these rates to national benchmarks
3. Rates by Age: Parse SMM and C-Section rates for purchaser’s plan participants by age group to understand whether these adverse outcomes are distributed equally versus concentrated among a particular age group
4. Rates by Race & Ethnicity: Parse SMM and C-Section rates for purchaser’s plan participants by race and ethnicity to understand whether adverse outcomes disproportionately impact women of color, and determine how the groups with highest rates of C-section and SMM compare to the groups with the lowest rates.
5. Rates & Costs by Health System: Examine the performance of various health systems within your network with regards to C-Section rate and SMM rate. This tab also includes space to incorporate costs of each type of delivery for comparison purposes.

These worksheets are accompanied by the relevant ICD-10 codes along with national benchmarks to help purchasers pull relevant data and understand performance relative to state averages. To populate this tool, purchasers can use their own claims data and analytics, or request data and analytics from either their benefit consultants or their TPA.

## Key Terms and Definitions

### Medical Terminology and Metrics:

1. **Total Deliveries**

The first step in evaluating the costs of childbirth is to identify which claims in your claims data are related to deliveries. All hospital claims that result in the delivery of a liveborn or stillborn infant will include one of the ICD-10 codes listed in Appendix A.

1. **Method of Delivery**

Women give birth either vaginally or by Cesarean section. Within each of these categories, there are a variety of clinical methods used by providers, and each is coded differently on a claim. To determine whether a delivery takes place vaginally or via C-section, the ICD-10-PCS (procedure code) associated with the delivery must be examined. Codes associated with vaginal and Cesarean deliveries are located in Appendices B and C, respectively.

1. **C-Section Rate**

Cesarean section deliveries are more invasive than vaginal deliveries, are at higher risk of complications and have longer recovery periods for mothers. Additionally, research indicates that C-sections are up to 60% more expensive than vaginal births.[[1]](#footnote-1)

C-sections are also associated with higher levels of cardiac arrest, unplanned or urgent hysterectomies, blood clots, infections, hematomas, wound disruptions, and have longer average hospital stays and higher rates of readmission.[[2]](#footnote-2) Cesarean deliveries increase the risk of maternal morbidity across all age and racial groups of delivering mothers, and vaginal deliveries are associated with lower rates of morbidity, regardless of whether or not the mother has had a previous cesarean.[[3]](#footnote-3) Additionally, infants delivered via cesarean have higher risk of pulmonary hypertension, respiratory distress syndrome, and childhood diseases such as asthma and obesity.4

To determine the C-section rate in your population, divide the number of Cesarean deliveries by the total number of deliveries in a given time period. In 2019, the total C-section delivery rate in the United States was 31.7%[[4]](#footnote-4), which most experts agree is too high. Lower Cesarean delivery rates are generally indicative of higher-quality maternity care within a population, and provide cost savings for purchasers. However, C-sections may be medically necessary – especially if a woman has had previous C-sections, if the baby is breech, or if there is more than one baby. C-sections can also be a lifesaving tool if maternal or fetal health complications require early or immediate delivery. It is therefore important to note that the C-section rate in your population is unlikely to ever approach zero, and if your members have higher rates of multiple births, previous Cesareans, or pregnancy and delivery complications, you may have a higher-than-average overall C-section rate.

Nulliparous women with singleton, full-term, vertex pregnancies provide the best opportunity to safely reduce the C-section rate.[[5]](#footnote-5) These lower-risk “NTSV” C-sections can provide a proxy for the potentially preventable C-sections within your population. Healthy People 2030 has set the target for the NTSV C-section rate at 23.6%.[[6]](#footnote-6) However, NTSV C-sections can’t be measured from claims data and require data from Electronic Medical Record or other administrative data provided by a hospital. Hospitals are required to report NTSV C-Section rates to the Joint Commission on Accreditation of Healthcare Organizations.

1. **Episiotomy**

An episiotomy is a cut made in the perineum during vaginal delivery. Although they were once common practice, current research indicates that routine episiotomies provide little benefit to mother or baby and cause greater trauma during birth.[[7]](#footnote-7) Only one ICD-10-PCS code, when coded with a delivery hospitalization, indicates that an episiotomy occurred during the birth.

To derive your organization’s episiotomy rate, divide the number of delivery claims that include the episiotomy code by total number of deliveries. The Leapfrog Group suggests a target episiotomy rate of <5% across all deliveries.[[8]](#footnote-8) Lower rates are indicative of better-quality care.

1. **Severe Maternal Morbidity**

Severe Maternal Morbidity (SMM) describes a set of complications during delivery that are dangerous and potentially life-threatening for the mother. Complications that meet this definition include blood transfusions, emergency hysterectomy, blood clots, stroke, heart failure and sepsis, among others. The U.S. Centers for Disease Control provides a [complete list of SMM codes](https://www.cdc.gov/reproductivehealth/maternalinfanthealth/smm/severe-morbidity-ICD.htm). To calculate the SMM rate for a population, identify all delivery claims that include *one or more* SMM codes and divide by the total number of deliveries.

Note that unlike C-sections and episiotomy rates, which measure a single health outcome, SMM comprises multiple adverse health outcomes, and several SMM indicators can occur during a single birth.

Severe maternal morbidity has risen significantly since the late 1990s, and recorded its highest-ever numbers in 2014, the last year for which national data is available. In that year, 144 out of every 10,000 live births involved maternal complications that fall under the definition of SMM.[[9]](#footnote-9) Severe maternal morbidity can lead to life-altering consequences for mothers, and high to extremely high additional costs for purchasers. Understanding and reducing your population’s SMM rate is critical to increasing value in maternity care.

### Statistical Terminology and Metrics

The embedded worksheets include several statistical terms that are not specific to maternity care and reflect the general vocabulary of scientific measurement. Definitions are provided below as they pertain to maternity care:

1. Population Size (N) – the number of deliveries within your population
2. Rate – the number of cases of a specified condition or procedure per 100 individuals within your population.
3. Average Cost – the total cost of all deliveries within a specific category, divided by the total number of births within that category
4. Composite Rate – the composite rate of severe maternal morbidity is the total number of deliveries coded with *one or more* SMM indicators, divided by the total number of deliveries within the general population. It is important to note that summing the rates of the various SMM indicators will not correctly identify the SMM rate, as these conditions are often comorbid.

## Segmenting Data by Sub-Groups (Age & Race/Ethnicity)

Within delivery claims, identifying trends by demographic group can assist in analyzing the risk and cost disparities present among your childbearing population.[[10]](#footnote-10),[[11]](#footnote-11)  Identifying member race and ethnicity through claims is possible if your health plan or TPA asks enrollees to self-identify after enrollment. If this data is not currently available, CPR advises discussing with your plan or TPA the possibility of making it available in the future.

Examining which demographic groups are more likely to undergo C-sections, and which groups are more likely to face severe complications, will help your organization identify the most vulnerable populations within your membership. This is where interventions may provide the most value.

The toolkit uses the following groups for stratification:

|  |  |
| --- | --- |
| **Mother’s Age** | **Mother’s Race & Ethnicity** |
| * < 25 years * 25 to 29 years * 30 to 34 years * 35 to 39 years * 40 years or older | * Asian * Black (non-Hispanic) * Hispanic (any race) * Multiracial or Other * White (non-Hispanic) |

Specifically, the tool identifies:

* C-Section rate by age and race/ethnicity
* SMM rate by age and race/ethnicity
* Average costs of deliveries, both with and without C-Sections and with and without SMM
* Health systems with the highest C-Section rates
* Health systems with the highest SMM rates

1. <https://www.statista.com/statistics/801191/hospital-costs-vaginal-birth-vs-cesarean-section-in-the-us-on-average/> [↑](#footnote-ref-1)
2. National Partnership for Women & Families. “Vaginal or Cesarean Birth: What Is at Stake for Women and Babies?” (2012) <http://www.nationalpartnership.org/our-work/resources/health-care/maternity/vaginal-or-cesarean-birth-what-is-at-stake.pdf> [↑](#footnote-ref-2)
3. Curtin, Sally C., Kimberly D. Gregory, Lisa M. Korst, and Sayeedha F.G. Uddin. 2015. "Maternal Morbidity for Vaginal and Cesarean Deliveries, According to Previous Cesarean History: New Data From the Birth Certificate, 2013." *National Vital Statistics Reports* 64 (4). [↑](#footnote-ref-3)
4. Centers for Disease Control and Prevention National Vital Statistics Reports, “Births: Provisional Data for 2019.” <https://www.cdc.gov/nchs/data/vsrr/vsrr-8-508.pdf> [↑](#footnote-ref-4)
5. Nulliparous = first birth for a women. Vertex = baby in a head down position. [↑](#footnote-ref-5)
6. U.S. Department of Health and Human Services, “Healthy People 2030,” <https://health.gov/healthypeople/objectives-and-data/browse-objectives/pregnancy-and-childbirth/reduce-cesarean-births-among-low-risk-women-no-prior-births-mich-06> [↑](#footnote-ref-6)
7. Jiang H, Qian X, Carroli G, Garner P. Selective versus routine use of episiotomy for vaginal birth. Cochrane Database of Systematic Reviews 2017, Issue 2. Art. No.: CD000081. DOI: 10.1002/14651858.CD000081.pub3. [↑](#footnote-ref-7)
8. <https://www.leapfroggroup.org/ratings-reports/rate-episiotomy> [↑](#footnote-ref-8)
9. Centers for Disease Control and Prevention, “Severe Maternal Morbidity in the United States”

   <https://www.cdc.gov/reproductivehealth/maternalinfanthealth/severematernalmorbidity.html> [↑](#footnote-ref-9)
10. National Research Council (US) Panel on DHHS Collection of Race and Ethnic Data; Ver Ploeg M, Perrin E, editors. Eliminating Health Disparities: Measurement and Data Needs. Washington (DC): National Academies Press (US); 2004. Appendix D, The Role of Racial and Ethnic Data Collection in Eliminating Disparities in Health Care. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK215740/> [↑](#footnote-ref-10)
11. Cavazos-Rehg, PA, Krauss, MJ, Spitznagel, EL *et al.* Maternal Age and Risk of Labor and Delivery Complications. Maternal and Child Health Journal 19, 1202–1211 (2015). DOI: 10.1007/s10995-014-1624-7 [↑](#footnote-ref-11)