

# Actionable Patient Safety Solutions (APSS) #11C: **Reducing unnecessary cesarean sections (c-sections)**

## How to use this guide

This guide gives actions and resources for creating and sustaining safe practices for reducing unnecessary cesarean sections (c-sections). In it, you'll find:

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# Executive summary checklist

An unnecessary c-section is when the decision to deliver a baby via c-section is driven by factors other than medical necessity. Unnecessary c-sections lead to short- and long-term complications and increased maternal and neonatal morbidity and mortality (Bauserman, et al., 2015). Short-term complications include blood loss, infection, and venous thrombosis. Long-term complications include an increased risk of abnormal placentation and uterine rupture in subsequent pregnancies. A recent multi-facility study demonstrated that the rate of cesareans in low-risk patients can be quickly lowered at scale with no maternal or neonatal harm by following guidelines from American College of Obstetricians and Gynecologists and Society for Maternal Fetal Medicine and providing enhanced labor support (Main, 2019).

### Establish readiness in every unit

- Build a healthcare provider and maternity unit culture that values vaginal birth and understands the risks of c-section birth for current and future pregnancies (Chaillet & Dumont, 2007) Optimize patient and family engagement. Actively involve patients and families in areas such as:
  - Education
  - Informed consent
  - Shared decision-making about normal healthy labor and birth
- Develop healthcare provider expertise in approaches to labor that maximize the likelihood of vaginal birth (Chaillet, 2007). These areas include:
  - Assessment of labor
  - Methods to promote labor progress
  - Labor support
  - Pharmacologic and nonpharmacologic pain management
  - Shared decision-making
- Use patient stories, in written and video form, to identify gaps and inspire change in your staff

### Recognize and prevent in every patient

- Develop and implement standardized practices for every patient (Spong, 2012, American Congress of Obstetricians and Gynecologists (ACOG), 2019; Society for Maternal Fetal Medicine (SMFM), 2019). in areas that include:
  - Admission criteria
  - Triage management
  - Education
  - Support for women who present in spontaneous labor
- Offer standardized techniques for pain management and comfort measures that promote labor progress and decrease the incidence of dysfunctional labor (Hodnett, 2013)

- Use standardized methods to assess the fetal heart rate status (Macones, Hankins, Spong, Hauth, & Moore, 2008), including:
  - Interpretation
  - Documentation using The National Institute of Child Health and Human Development (NICHD) terminology
  - Methods that promote freedom of movement
- Adopt protocols for timely identification of specific problems, such as herpes and breech presentation, for patients who can benefit from proactive intervention before labor to reduce the risk for c-section birth (Hollier & Wendel, 2008).

## Respond

- Have the capability and equipment to provide appropriate-level maternity care and a readiness at all times to initiate emergency procedures to meet the needs of women and newborns within the center. (Cite OCC#9 - <https://www.acog.org/Clinical-Guidance-and-Publications/Obstetric-Care-Consensus-Series/Levels-of-Maternal-Care>)
- Apply standardized induction scheduling to ensure correct selection and preparation of women undergoing induction of labor (ACOG, 2009)
- Recognize and treat dystocia promptly by following standardized evidence-based labor algorithms, policies, and techniques (Spong, 2012)
- Adopt policies that outline standard responses to abnormal fetal heart rate patterns and uterine activity (Clark, et al., 2013)
- Make available specialized expertise and techniques to lessen the need for c-section birth (Hollier, 2008) such as:
  - Breech version
  - Operative vaginal birth
  - Twin birth protocols

## Use data to find areas for improvement

- Track and report labor and c-section measures in sufficient detail (Challitt, 2007; CMQCC, 2016) so your institution can:
  - Compare to similar institutions
  - Conduct case review and system analysis to drive care improvement
  - Assess individual healthcare provider performance
- Use relevant metrics and balancing measures to assess maternal and neonatal outcomes that may be the result of changes in labor management strategies

# What we know about reducing unnecessary c-sections

## C-section rates have increased in the U.S.

The c-section is the most commonly performed surgery in the U.S.:

- Approximately 1.2 million of the procedures are performed annually (CDC, 2019)
- Between 1970 and 2009, the total cesarean rate rose from 5.5% to a high of 32.9%
- Current data show that it remains plateaued at 31.9% (Placek and Taffel, 1981; Martin et al., 2011; Martin et al., 2019)

Among the population of first-time mothers with low-risk births (also called Nulliparous, Term, Singleton, Vertex (NTSV)), 25.9% give birth by cesarean, which is a 40% increase since 1997 (Martin et al., 2019). C-section rates have also increased globally (Betran, Ye, Moller, and Zhang, 2016), primarily in developed countries.

Evidence shows the rise in utilization of the cesarean has not been accompanied by a reduction in cases of perinatal morbidity and mortality (Gregory, Jackson, Korst, and Fridman, 2011), nor can it be explained solely by patient characteristics, demographics, or comorbidities (Li, 2003).

## C-section rates vary by hospitals and providers

A 2013 study identified a 10-fold variation in cesarean rates across the U.S. (Kozhimannil, Law, and Virnig, 2013). The overall trend of rising cesarean rates is attributed to a complex, multifactorial set of issues including:

- Payment incentives or disincentives (Main et al., 2012)
- Real or perceived liability fears (Main et al., 2006)
- Cultural acceptance and resource management (Plough et al., 2017)

Nevertheless, evidence shows that unwarranted variation in rates between hospitals and providers is largely due to subjectivity in clinical decision-making. Over 60% of hospital variation in NTSV patients can be attributed to first birth labor induction rates and first birth early labor admission rates (Main et al., 2006).

The NTSV Cesarean Birth measure - endorsed by the National Quality Forum in 2008 - was designed to identify variations between hospitals, and is used for hospital data reporting by The Joint Commission and the Leapfrog Group. It shows that outcomes for NTSV patients are largely influenced by physician factors, rather than patient characteristics or obstetric diagnoses, and specifically identifies variations between birthing facilities (Joint Commission, 2017).

## C-section in low-income countries

Women in lower-income regions of the world do not have appropriate access to obstetric care, including cesarean births. This leads to high rates of perinatal morbidity and mortality (Thomas, Meadows, and Mcqueen, 2016).

Increased incidence of cesarean births in countries that lack infrastructure to safely manage the downstream consequences of a primary cesarean has resulted in an increased incidence of complications (Beltman et al., 2011), including:

- Postpartum hemorrhage
- Abnormal placentation
- Infection

## Risks of c-section compared to vaginal birth

The risk of severe maternal morbidity is higher as a result of a cesarean birth compared with vaginal birth. The risk of maternal death is 4 times higher in cesarean births, while amniotic fluid embolism is 2-3 times more likely.

Other serious complications occur in cesarean birth at an overall rate that is 3 times higher than vaginal birth (2.7% vs. 0.9%) (Liu, Joseph, Liston, and Heaman, 2007):

- Obstetric hemorrhage requiring hysterectomy
- Complications from anesthesia
- Venous thromboembolism (VTE)
- Maternal cardiac arrest
- Major infection

Compared to vaginal births, cesarean births are also associated with:

- More neonatal intensive care unit stays
- Delays in establishment of breastfeeding
- Longer average length-of-stay
- Longer recovery times

Vaginal births carry an increased risk of 3rd- and 4th-degree perineal lacerations (tear or laceration through the perineal muscles and the muscle layer that surrounds the anal canal) (Caughey *et al.*, 2014).

## Risks of repeat c-section

A repeat cesarean increases a patient's risk of placental abnormalities, such as placenta accreta (a condition in which some or all of the placenta attaches abnormally to the wall of the uterus).

The complications associated with placenta accreta include:

- Nearly 90% of patients require a blood transfusion
- Bladder and bowel damage
- Amniotic fluid embolism
- Venous thromboembolism
- Infection
- An estimated maternal mortality rate of 6-7%

The increase in incidence of placenta accreta parallels the rise in the cesarean rate, and the estimated ratio of deliveries affected by placenta accreta in the last decade is 1:272 (Cite-<https://www.ncbi.nlm.nih.gov/pubmed/25897639>)

## Women who want vaginal birth after cesarean can't obtain it

About 87% of the approximate 593,241 women with a history of a prior cesarean who gave birth in the U.S. in 2018 did so by c-section.

The rate of vaginal birth after cesarean (VBAC) increased from 3% following the 1981 National Institutes of Health Consensus Conference on Cesarean Childbirth to a high of 28.3% in 1996, and decreased to a low of 8.3% in 2007 (Gregory *et al.*, 2010). The VBAC rate has since climbed to 13.3% in 2018.

The rapid decline between 1996 and 2007 is commonly attributed to fear of liability or a hospital's inability to meet the previously published safety recommendations for VBAC, such as having a physician "immediately available."

These limited options for patients result in an unknown proportion of patients in the U.S. who may prefer the option of VBAC, yet must consent to repeat cesarean birth or attempt an out-of-hospital trial of labor if they are unable or unwilling to travel to the nearest hospital that will offer a trial of labor after cesarean (TOLAC). A 2018 report from Listening to Mothers California found that almost half of individuals surveyed were interested in planning a VBAC. However, half reported not being given the option due to the restrictions of VBAC in hospitals. In an effort to increase access to VBAC, ACOG published updated recommendations in November 2017 which removed the “immediately available” language and now state that any Level I (Basic Care) facility per ACOG’s Levels of Maternal Care standards can offer TOLAC (Grobman et al., 2017).

## **Preventing unnecessary c-sections**

The World Health Organization (WHO) stated in 2015 that “Every effort should be made to provide caesarean sections to women in need, rather than striving to achieve a specific rate.” Regional optimization of c-section utilization saves lives and prevents maternal and perinatal morbidity (WHO, 2015).

In 2014, SMFM and ACOG published a consensus statement on the evidence behind safely reducing primary cesarean rates (Caughey, Cahil, Guise, and Rouse, 2014). Other women’s health and obstetric safety organizations, such as the California Maternal Quality Care Collaborative (CMQCC) and the Council of Patient Safety on Women’s Health (CPSWH) have since published comprehensive toolkits to implement recommendations (CMQCC, 2016; CPSWH, 2016).

Global attention has been focused on both the overuse and underuse of cesarean births, with increasing emphasis on optimizing the rate of cesarean births (WHO, 2017; CDC, 2017; WHO, n.d.; Haelle, 2017) through:

- Regionalization of risk-appropriate care
- Access to trained birth attendants
- Quality improvement projects
- Payment reform and public-facing awareness
- Educational campaigns

## **The evidence for programs that seek to increase appropriate use of c-section**

A three-year, cross-sectional study of 56 hospitals with more than 119,000 annual births, and with nulliparous, term, singleton, vertex cesarean delivery rates greater than 23.9% was conducted by the California Maternal Quality Care Collaborative (CMQCC) statewide collaborative. Researchers found that cesarean rates can be safely lowered at scale with no evidence of worsened birth outcomes for mothers and neonates by following American College of Obstetricians and Gynecologists and Society for Maternal-Fetal Medicine guidelines and providing enhanced labor support. (cite- [https://journals.lww.com/greenjournal/Citation/2019/04000/Safety\\_Assessment\\_of\\_a\\_Large\\_Scale\\_Improvement.2.aspx](https://journals.lww.com/greenjournal/Citation/2019/04000/Safety_Assessment_of_a_Large_Scale_Improvement.2.aspx) March 2019)

Other recent success stories include quality improvement projects to reduce unnecessary c-sections at:

- Beth Israel Deaconess Medical Center in Boston, MA (Vadnais et al., 2017)
- Carolinas Health System, headquartered in North Carolina (Bell et al., 2017)
- Brazil’s Hospital Israelita Albert Einstein (HIAE) (IHI, 2017)

# Leadership plan

Hospital governance, senior administrative leadership, clinical leadership, and safety/risk management leadership need to work collaboratively to reduce unnecessary c-sections.

## **Create a culture that values vaginal birth and avoids unnecessary c-sections**

- To achieve lower c-section rates, individual practices, clinics, hospitals, birth centers, and health systems should develop a culture that values vaginal birth by preparing their providers and working with women to redesign their care
- Senior executive leadership should commit to creating a culture that values vaginal birth and avoids unnecessary c-section
- Participate actively in regional and state perinatal collaboratives
- Use patient stories, in written and video form, to identify gaps and inspire change in your staff
  - The story of Kristen Terlizzi, who nearly died of placenta accreta, is an inspiring story about how informing patients about the downstream risk of c-sections is imperative. You can view a film created by the Patient Safety Movement Foundation for free here: [youtu.be/RMnQZUqQhjU](https://youtu.be/RMnQZUqQhjU).

## **Create the infrastructure needed to reduce unnecessary c-sections**

- Redesign facilities and restructure provider teams to support physiologic labor methods and ensure prompt intervention for abnormal labors
- Create an interdisciplinary team that is led by a physician and administrative champions who are well-respected and knowledgeable, including:
  - Obstetrician/maternal fetal medicine specialists
  - Nursing leaders
  - Obstetrical anesthesiologists
  - Physicians in training (residents/fellows)
  - Nurse midwives/nurse practitioners
  - Labor/OR nurses
  - Doulas
  - Childbirth educators
  - Quality Improvement (QI) staff
  - Data analytics/information technology/EMR design and maintenance team
  - Pharmacists
- Leadership should give staff appropriate support and educational time to focus on clinical changes and labor techniques which have been shown to reduce unnecessary cesarean birth - hold managers accountable for implementing such changes

## **Adopt clinical and administrative practices that support vaginal birth**

- Develop and execute specialized protocols and precautions to address the high-risk problems associated with a prior c-section, especially in patients with suspected abnormal placentation
- Administrative and financial leadership should prepare for reimbursement strategies that favor vaginal delivery and shared risk

- QI practices should incorporate c-section rates to follow, especially the NTSV cesarean rate
- Conduct hospital- and system-wide review and transparently share with providers and patients

## Action plan

### Analyze

- Complete an in-depth analysis of your facility's current rate of c-section with detailed analysis of:
  - o Indications for procedures
  - o Specific rates of total, primary, repeat, NTSV c-sections for the institution and individual providers
  - o Analysis of risk factors such as parity, maternal age, and concurrent medical diagnoses
  - o Audit of c-sections with tools to evaluate possible interventions, including stage of labor, induction protocols, cervical ripening, and use of instrumented delivery. Example of audit tools can be found in referenced toolkits.
  - o Rates of labor inductions and techniques used
  - o Evaluation of anesthesia techniques and availability
  - o Scheduling protocols
  - o Consenting procedures for elective cesareans for declined trial of labor candidates, without medical indications
  - o Compliance with standard labor support techniques
  - o Compliance with standard intervention for failure to progress

### Identify gaps

- Identify gaps in procedures, protocols, and care which can be used to promote vaginal birth

### Use guidelines and toolkits

- Adhere to guidelines outlined by the ACOG/SMFM consensus statement on preventing the first c-section and other recommendations in toolkits such as the CMQCC Toolkit on Promoting Vaginal Birth
- Although the results of the ARRIVE Trial published in 2019 showed a lower NTSV cesarean rate among its participants, no changes have been made to the SMFM/ACOG guidelines for induction of labor. A statement issued by CMQCC stated that the results in this study "were obtained in university hospitals with strict labor guidelines and a strict definition of failed induction. If a hospital's induction guidelines are to be changed to allow for elective inductions at 39 weeks, strict guidelines for defining failed induction and for management of active phase and fetal monitoring abnormalities need to be adopted simultaneously" (Main, 2018).

### Implement interventions

- Ensure a culture that values vaginal delivery and avoids unnecessary c-section is present in the institution

- Promote a shared decision-making process where prenatal providers discuss and promote patient-centered labor support and management
- Develop staff expertise in labor support and management which maximizes the likelihood of successful safe vaginal delivery
- Standardize admission criteria to prevent latent phase labor patients being admitted and requiring aggressive management to progress into active labor
- Offer a multitude of pharmacologic choices and physiologic methods for pain management to ensure patient comfort and satisfaction
- Standardize intervention plans based upon defined fetal heart rate characteristics which lead to prompt appropriate intervention and minimize the risk of over interventions
- Adhere to evidence-based algorithms for failure-to-progress interventions that increase successful labors and have minimal side effects to the mother and fetus
- Make available standard protocols, expertise, and techniques for decreasing the cesarean rate in breech presentations, history of genital herpes, and twin gestation
- Conduct transparent reporting of cesarean section rates, risk factors, and other information by facility and providers

## Educate

- Educate patients and families of long-term risks and benefits of c-section and benefits of vaginal birth
- Review and train all providers in various techniques and protocols which reduce the need for protracted and unsuccessful labors

## Technology plan

These suggested practices and technologies have shown proven benefit or, in some cases, are the only known technologies for certain tasks. If you know of other options not listed here, please complete the form for the PSMF Technology Vetting Workgroup to consider:

[patientsafetymovement.org/actionable-solutions/apss-workgroups/technology-vetting/](https://patientsafetymovement.org/actionable-solutions/apss-workgroups/technology-vetting/)

### System or practice

**ONC Meaningful Use Certified Electronic Health Record (EHR) System** - should have these capabilities:

**Proper data elements:** Review the EHR to make sure proper data elements are present, and are formatted and defined into standard terminologies for incorporating your alerting, measure reporting, and documentation needs.

- For example: Use national or international standards for definitions and value sets that are available, such as fetal heart rate interpretations defined by NIHCD consensus

This will allow for comparisons between institutions and help in defining normal practice and thresholds.

**Labor tools:** Use standard reporting tools, such as a labor curve, intervention curve, and trending visualizations for fetal heart rate interpretations. These enable providers to more accurately assess the overall labor status that should be incorporated into systems.

## System or practice

**Device integration:** The EHR should have robust device integration of fetal monitoring data, intravenous pumps, and vital sign devices, which can reduce mundane documentation for caregivers and allow them to devote more of their time to more value-added processes such as labor support. In addition, newer monitoring devices incorporate continuous decision support/artificial intelligence and analysis which should integrate into the EHR and ensure a single source of accurate data truth and improve provider interpretations.

**Decision support:** Standard practice alerts, used in a judicious manner to prevent alert fatigue, can incorporate best practice guidelines for labor interventions and responses to fetal heart rate patterns in a standard way. Incorporate:

- Other methods of decision support into documentation tools and order sets to improve documentation and reporting, and allow clinicians to follow standardized protocols more frequently
- Best practice content sources into standard workflows allowing for easier review by clinicians

**Embedded reporting data elements:** EHR should allow collection of clinical data as part of standardized documentation, and collection of ongoing data entered by nurses, physicians, and others. Specific data elements for labor support can help you review and train on these new techniques and enable you to evaluate compliance. Carefully review and maintain these so that robust data analytics can be routine.

## Fetal monitors

Newer fetal monitors have strip analysis artificial intelligence algorithms incorporated into the systems. These will aid clinicians in their interpretation skills and allow for easier and more complete documentation. Wireless monitoring can also lead to greater ambulation and positioning options for patients in active labor.

Developing Technology: Transcutaneous fetal oximetry

## Cervical ripening techniques

Device manufacturers and pharmaceutical companies should expand the list of options for safe and effective ripening of the cervix. Programs should target reduction and elimination of induction of labor with an unripe cervix. Nevertheless, induction with unripe cervix will be required in many labors, and better methods are needed. In addition, the goal for safe outpatient methods should be proposed to reduce cost.

## System or practice

### Web/mobile-based learning tools

All major guidelines call for better education for providers and patients. Unfortunately, traditional didactic teaching will not be possible on that scale, and newer online education techniques are required for cost-effective delivery. For patients, convenient methods on electronic hand-held devices can be developed for both learning and communication. Paired with group prenatal care, the patients can also work and learn together to understand risks, benefits, and techniques of modern labor.

# Measuring outcomes

Although there is not a specific metric, U.S. hospitals need to monitor their overall c-section rates. These are several elements hospitals can look at to reduce the number of unnecessary c-sections:

- The overall induction rate
- The rate of active labor patients admitted prior to 4 centimeters
  - C-section deliveries with no labor trial for low risk (NTSV), uncomplicated births
  - Elective c-section rate for low risk, uncomplicated births
  - Maternal, clinical and demographic characteristics for low risk, uncomplicated births with C-section as the elected method of delivery
  - C-section rate among women who aimed to deliver vaginally
  - Avg/median labor trial period (by stage?) before C-section delivery among women who aimed to deliver vaginally
  - Rate of complications during labor as reason given for emergent C-section among women who aimed to deliver vaginally
  - Rate of complications during pregnancy as reason given for emergent C-section among women who aimed to deliver vaginally
  - Low risk birth = single, term, vertex, and the absence of any medical condition preventing safe vaginal delivery

## Performance Measure Name: Cesarean Birth

**Description:** Nulliparous women with a term, singleton baby in a vertex position delivered by cesarean birth

**Type Of Measure:** Outcome

**Improvement Noted As:** Decrease in the rate

### Metric recommendations

Include reason for C-Section for numerator patients

**Numerator Statement:** Patients with cesarean births

### Included Populations:

ICD-10-PCS Principal Procedure Code or ICD-10-PCS Other Procedure Codes for cesarean birth as defined in Appendix A, Table 11.06

10D00Z0      Extraction of Products of Conception, High, Open Approach

10D00Z1      Extraction of Products of Conception, Low, Open Approach

10D00Z2      Extraction of Products of Conception, Extraperitoneal, Open Approach

**Data Elements:** ICD-10-PCS Principal Procedure Code, ICD-10-PCS Other Procedure Codes

**Denominator Statement:** Nulliparous patients delivered of a live term singleton newborn in vertex presentation

### Included Populations:

ICD-10-PCS Principal Procedure Code or ICD-10-PCS Other Procedure Codes for delivery as defined in Appendix A, Table 11.01.1

10D00Z0      Extraction of Products of Conception, High, Open Approach

|         |   |
|---------|---|
| 10D00Z1 | Extraction of Products of Conception, Low, Open Approach                                  |
| 10D00Z2 | Extraction of Products of Conception, Extraperitoneal, Open Approach                      |
| 10D07Z3 | Extraction of Products of Conception, Low Forceps, Via Natural or Artificial Opening      |
| 10D07Z4 | Extraction of Products of Conception, Mid Forceps, Via Natural or Artificial Opening      |
| 10D07Z5 | Extraction of Products of Conception, High Forceps, Via Natural or Artificial Opening     |
| 10D07Z6 | Extraction of Products of Conception, Vacuum, Via Natural or Artificial Opening           |
| 10D07Z7 | Extraction of Products of Conception, Internal Version, Via Natural or Artificial Opening |
| 10D07Z8 | Extraction of Products of Conception, Other, Via Natural or Artificial Opening            |
| 10E0XZZ | Delivery of Products of Conception, External Approach                                     |

### **Excluded Populations:**

ICD-10-CM Principal Diagnosis Code or ICD-10-CM Other Diagnosis Codes for multiple gestations and other presentations as defined in **Appendix A, Table 11.09**

- Less than 8 years of age
- Greater than or equal to 65 years of age
- Length of Stay >120 days
- Gestational Age < 37 weeks or UTD

|        |  |
|--------|--|
| O30001 | Twin pregnancy, unspecified number of placenta and unspecified number of amniotic sacs, first trimester  |
| O30002 | Twin pregnancy, unspecified number of placenta and unspecified number of amniotic sacs, second trimester |
| O30003 | Twin pregnancy, unspecified number of placenta and unspecified number of amniotic sacs, third trimester  |
| O30011 | Twin pregnancy, monochorionic/monoamniotic, first trimester  |
| O30012 | Twin pregnancy, monochorionic/monoamniotic, second trimester   |
| O30013 | Twin pregnancy, monochorionic/monoamniotic, third trimester  |
| O30031 | Twin pregnancy, monochorionic/diamniotic, first trimester  |
| O30032 | Twin pregnancy, monochorionic/diamniotic, second trimester   |
| O30033 | Twin pregnancy, monochorionic/diamniotic, third trimester  |
| O30041 | Twin pregnancy, dichorionic/diamniotic, first trimester  |
| O30042 | Twin pregnancy, dichorionic/diamniotic, second trimester   |
| O30043 | Twin pregnancy, dichorionic/diamniotic, third trimester  |
| O30091 | Twin pregnancy, unable to determine number of placenta and number of amniotic sacs, first trimester      |
| O30092 | Twin pregnancy, unable to determine number of placenta and number of amniotic                            |

sacs, second trimester

- O30093 Twin pregnancy, unable to determine number of placenta and number of amniotic sacs, third trimester
- O30101 Triplet pregnancy, unspecified number of placenta and unspecified number of amniotic sacs, first trimester
- O30102 Triplet pregnancy, unspecified number of placenta and unspecified number of amniotic sacs, second trimester
- O30103 Triplet pregnancy, unspecified number of placenta and unspecified number of amniotic sacs, third trimester
- O30111 Triplet pregnancy with two or more monochorionic fetuses, first trimester
- O30112 Triplet pregnancy with two or more monochorionic fetuses, second trimester
- O30113 Triplet pregnancy with two or more monochorionic fetuses, third trimester
- O30121 Triplet pregnancy with two or more monoamniotic fetuses, first trimester
- O30122 Triplet pregnancy with two or more monoamniotic fetuses, second trimester
- O30123 Triplet pregnancy with two or more monoamniotic fetuses, third trimester
- O30131 Triplet pregnancy, trichorionic/triamniotic, first trimester
- O30132 Triplet pregnancy, trichorionic/triamniotic, second trimester
- O30133 Triplet pregnancy, trichorionic/triamniotic, third trimester
- O30191 Triplet pregnancy, unable to determine number of placenta and number of amniotic sacs, first trimester
- O30192 Triplet pregnancy, unable to determine number of placenta and number of amniotic sacs, second trimester
- O30193 Triplet pregnancy, unable to determine number of placenta and number of amniotic sacs, third trimester
- O30201 Quadruplet pregnancy, unspecified number of placenta and unspecified number of amniotic sacs, first trimester
- O30202 Quadruplet pregnancy, unspecified number of placenta and unspecified number of amniotic sacs, second trimester
- O30203 Quadruplet pregnancy, unspecified number of placenta and unspecified number of amniotic sacs, third trimester
- O30211 Quadruplet pregnancy with two or more monochorionic fetuses, first trimester
- O30212 Quadruplet pregnancy with two or more monochorionic fetuses, second trimester
- O30213 Quadruplet pregnancy with two or more monochorionic fetuses, third trimester
- O30221 Quadruplet pregnancy with two or more monoamniotic fetuses, first trimester
- O30222 Quadruplet pregnancy with two or more monoamniotic fetuses, second trimester
- O30223 Quadruplet pregnancy with two or more monoamniotic fetuses, third trimester
- O30231 Quadruplet pregnancy, quadrachorionic/quadra-amniotic, first trimester

|        |  |
|--------|--|
| O30232 | Quadruplet pregnancy, quadrachorionic/quadra-amniotic, second trimester  |
| O30233 | Quadruplet pregnancy, quadrachorionic/quadra-amniotic, third trimester   |
| O30291 | Quadruplet pregnancy, unable to determine number of placenta and number of amniotic sacs, first trimester                    |
| O30292 | Quadruplet pregnancy, unable to determine number of placenta and number of amniotic sacs, second trimester                   |
| O30293 | Quadruplet pregnancy, unable to determine number of placenta and number of amniotic sacs, third trimester                    |
| O30801 | Other specified multiple gestation, unspecified number of placenta and unspecified number of amniotic sacs, first trimester  |
| O30802 | Other specified multiple gestation, unspecified number of placenta and unspecified number of amniotic sacs, second trimester |
| O30803 | Other specified multiple gestation, unspecified number of placenta and unspecified number of amniotic sacs, third trimester  |
| O30811 | Other specified multiple gestation with two or more monochorionic fetuses, first trimester                                   |
| O30812 | Other specified multiple gestation with two or more monochorionic fetuses, second trimester                                  |
| O30813 | Other specified multiple gestation with two or more monochorionic fetuses, third trimester                                   |
| O30821 | Other specified multiple gestation with two or more monoamniotic fetuses, first trimester                                    |
| O30822 | Other specified multiple gestation with two or more monoamniotic fetuses, second trimester                                   |
| O30823 | Other specified multiple gestation with two or more monoamniotic fetuses, third trimester                                    |
| O30831 | Other specified multiple gestation, number of chorions and amnions are both equal to the number of fetuses, first trimester  |
| O30832 | Other specified multiple gestation, number of chorions and amnions are both equal to the number of fetuses, second trimester |
| O30833 | Other specified multiple gestation, number of chorions and amnions are both equal to the number of fetuses, third trimester  |
| O30891 | Other specified multiple gestation, unable to determine number of placenta and number of amniotic sacs, first trimester      |
| O30892 | Other specified multiple gestation, unable to determine number of placenta and number of amniotic sacs, second trimester     |
| O30893 | Other specified multiple gestation, unable to determine number of placenta and number of amniotic sacs, third trimester      |
| O3091  | Multiple gestation, unspecified, first trimester   |
| O3092  | Multiple gestation, unspecified, second trimester  |

|         |   |
|---------|---|
| O3093   | Multiple gestation, unspecified, third trimester  |
| O3111X0 | Continuing pregnancy after spontaneous abortion of one fetus or more, first trimester, not applicable or unspecified  |
| O3111X1 | Continuing pregnancy after spontaneous abortion of one fetus or more, first trimester, fetus 1                        |
| O3111X2 | Continuing pregnancy after spontaneous abortion of one fetus or more, first trimester, fetus 2                        |
| O3111X3 | Continuing pregnancy after spontaneous abortion of one fetus or more, first trimester, fetus 3                        |
| O3111X4 | Continuing pregnancy after spontaneous abortion of one fetus or more, first trimester, fetus 4                        |
| O3111X5 | Continuing pregnancy after spontaneous abortion of one fetus or more, first trimester, fetus 5                        |
| O3111X9 | Continuing pregnancy after spontaneous abortion of one fetus or more, first trimester, other fetus                    |
| O3112X0 | Continuing pregnancy after spontaneous abortion of one fetus or more, second trimester, not applicable or unspecified |
| O3112X1 | Continuing pregnancy after spontaneous abortion of one fetus or more, second trimester, fetus 1                       |
| O3112X2 | Continuing pregnancy after spontaneous abortion of one fetus or more, second trimester, fetus 2                       |
| O3112X3 | Continuing pregnancy after spontaneous abortion of one fetus or more, second trimester, fetus 3                       |
| O3112X4 | Continuing pregnancy after spontaneous abortion of one fetus or more, second trimester, fetus 4                       |
| O3112X5 | Continuing pregnancy after spontaneous abortion of one fetus or more, second trimester, fetus 5                       |
| O3112X9 | Continuing pregnancy after spontaneous abortion of one fetus or more, second trimester, other fetus                   |
| O3113X0 | Continuing pregnancy after spontaneous abortion of one fetus or more, third trimester, not applicable or unspecified  |
| O3113X1 | Continuing pregnancy after spontaneous abortion of one fetus or more, third trimester, fetus 1                        |
| O3113X2 | Continuing pregnancy after spontaneous abortion of one fetus or more, third trimester, fetus 2                        |
| O3113X3 | Continuing pregnancy after spontaneous abortion of one fetus or more, third trimester, fetus 3                        |
| O3113X4 | Continuing pregnancy after spontaneous abortion of one fetus or more, third trimester, fetus 4                        |

- O3113X5 Continuing pregnancy after spontaneous abortion of one fetus or more, third trimester, fetus 5
- O3113X9 Continuing pregnancy after spontaneous abortion of one fetus or more, third trimester, other fetus
- O3121X0 Continuing pregnancy after intrauterine death of one fetus or more, first trimester, not applicable or unspecified
- O3121X1 Continuing pregnancy after intrauterine death of one fetus or more, first trimester, fetus 1
- O3121X2 Continuing pregnancy after intrauterine death of one fetus or more, first trimester, fetus 2
- O3121X3 Continuing pregnancy after intrauterine death of one fetus or more, first trimester, fetus 3
- O3121X4 Continuing pregnancy after intrauterine death of one fetus or more, first trimester, fetus 4
- O3121X5 Continuing pregnancy after intrauterine death of one fetus or more, first trimester, fetus 5
- O3121X9 Continuing pregnancy after intrauterine death of one fetus or more, first trimester, other fetus
- O3122X0 Continuing pregnancy after intrauterine death of one fetus or more, second trimester, not applicable or unspecified
- O3122X1 Continuing pregnancy after intrauterine death of one fetus or more, second trimester, fetus 1
- O3122X2 Continuing pregnancy after intrauterine death of one fetus or more, second trimester, fetus 2
- O3122X3 Continuing pregnancy after intrauterine death of one fetus or more, second trimester, fetus 3
- O3122X4 Continuing pregnancy after intrauterine death of one fetus or more, second trimester, fetus 4
- O3122X5 Continuing pregnancy after intrauterine death of one fetus or more, second trimester, fetus 5
- O3122X9 Continuing pregnancy after intrauterine death of one fetus or more, second trimester, other fetus
- O3123X0 Continuing pregnancy after intrauterine death of one fetus or more, third trimester, not applicable or unspecified
- O3123X1 Continuing pregnancy after intrauterine death of one fetus or more, third trimester, fetus 1
- O3123X2 Continuing pregnancy after intrauterine death of one fetus or more, third trimester, fetus 2
- O3123X3 Continuing pregnancy after intrauterine death of one fetus or more, third trimester, fetus 3

- O3123X4 Continuing pregnancy after intrauterine death of one fetus or more, third trimester, fetus 4
- O3123X5 Continuing pregnancy after intrauterine death of one fetus or more, third trimester, fetus 5
- O3123X9 Continuing pregnancy after intrauterine death of one fetus or more, third trimester, other fetus
- O318X10 Other complications specific to multiple gestation, first trimester, not applicable or unspecified
- O318X11 Other complications specific to multiple gestation, first trimester, fetus 1
- O318X12 Other complications specific to multiple gestation, first trimester, fetus 2
- O318X13 Other complications specific to multiple gestation, first trimester, fetus 3
- O318X14 Other complications specific to multiple gestation, first trimester, fetus 4
- O318X15 Other complications specific to multiple gestation, first trimester, fetus 5
- O318X19 Other complications specific to multiple gestation, first trimester, other fetus
- O318X20 Other complications specific to multiple gestation, second trimester, not applicable or unspecified
- O318X21 Other complications specific to multiple gestation, second trimester, fetus 1
- O318X22 Other complications specific to multiple gestation, second trimester, fetus 2
- O318X23 Other complications specific to multiple gestation, second trimester, fetus 3
- O318X24 Other complications specific to multiple gestation, second trimester, fetus 4
- O318X25 Other complications specific to multiple gestation, second trimester, fetus 5
- O318X29 Other complications specific to multiple gestation, second trimester, other fetus
- O318X30 Other complications specific to multiple gestation, third trimester, not applicable or unspecified
- O318X31 Other complications specific to multiple gestation, third trimester, fetus 1
- O318X32 Other complications specific to multiple gestation, third trimester, fetus 2
- O318X33 Other complications specific to multiple gestation, third trimester, fetus 3
- O318X34 Other complications specific to multiple gestation, third trimester, fetus 4
- O318X35 Other complications specific to multiple gestation, third trimester, fetus 5
- O318X39 Other complications specific to multiple gestation, third trimester, other fetus
- O321XX0 Maternal care for breech presentation, not applicable or unspecified
- O321XX1 Maternal care for breech presentation, fetus 1
- O321XX2 Maternal care for breech presentation, fetus 2
- O321XX3 Maternal care for breech presentation, fetus 3
- O321XX4 Maternal care for breech presentation, fetus 4
- O321XX5 Maternal care for breech presentation, fetus 5

|         |  |
|---------|--|
| O321XX9 | Maternal care for breech presentation, other fetus                                     |
| O322XX0 | Maternal care for transverse and oblique lie, not applicable or unspecified            |
| O322XX1 | Maternal care for transverse and oblique lie, fetus 1                                  |
| O322XX2 | Maternal care for transverse and oblique lie, fetus 2                                  |
| O322XX3 | Maternal care for transverse and oblique lie, fetus 3                                  |
| O322XX4 | Maternal care for transverse and oblique lie, fetus 4                                  |
| O322XX5 | Maternal care for transverse and oblique lie, fetus 5                                  |
| O322XX9 | Maternal care for transverse and oblique lie, other fetus                              |
| O323XX0 | Maternal care for face, brow and chin presentation, not applicable or unspecified      |
| O323XX1 | Maternal care for face, brow and chin presentation, fetus 1                            |
| O323XX2 | Maternal care for face, brow and chin presentation, fetus 2                            |
| O323XX3 | Maternal care for face, brow and chin presentation, fetus 3                            |
| O323XX4 | Maternal care for face, brow and chin presentation, fetus 4                            |
| O323XX5 | Maternal care for face, brow and chin presentation, fetus 5                            |
| O323XX9 | Maternal care for face, brow and chin presentation, other fetus                        |
| O328XX0 | Maternal care for other malpresentation of fetus, not applicable or unspecified        |
| O328XX1 | Maternal care for other malpresentation of fetus, fetus 1                              |
| O328XX2 | Maternal care for other malpresentation of fetus, fetus 2                              |
| O328XX3 | Maternal care for other malpresentation of fetus, fetus 3                              |
| O328XX4 | Maternal care for other malpresentation of fetus, fetus 4                              |
| O328XX5 | Maternal care for other malpresentation of fetus, fetus 5                              |
| O328XX9 | Maternal care for other malpresentation of fetus, other fetus                          |
| O329XX0 | Maternal care for malpresentation of fetus, unspecified, not applicable or unspecified |
| O329XX1 | Maternal care for malpresentation of fetus, unspecified, fetus 1                       |
| O329XX2 | Maternal care for malpresentation of fetus, unspecified, fetus 2                       |
| O329XX3 | Maternal care for malpresentation of fetus, unspecified, fetus 3                       |
| O329XX4 | Maternal care for malpresentation of fetus, unspecified, fetus 4                       |
| O329XX5 | Maternal care for malpresentation of fetus, unspecified, fetus 5                       |
| O329XX9 | Maternal care for malpresentation of fetus, unspecified, other fetus                   |
| O34211  | Maternal care for low transverse scar from previous cesarean delivery                  |
| O34212  | Maternal care for vertical scar from previous cesarean delivery                        |
| O34219  | Maternal care for unspecified type scar from previous cesarean delivery                |
| O364XX0 | Maternal care for intrauterine death, not applicable or unspecified                    |
| O364XX1 | Maternal care for intrauterine death, fetus 1  |

O364XX2 Maternal care for intrauterine death, fetus 2

O364XX3 Maternal care for intrauterine death, fetus 3

O364XX4 Maternal care for intrauterine death, fetus 4

O364XX5 Maternal care for intrauterine death, fetus 5

O364XX9 Maternal care for intrauterine death, other fetus

O4403 Complete placenta previa NOS or without hemorrhage, third trimester

O4413 Complete placenta previa with hemorrhage, third trimester

O4423 Partial placenta previa NOS or without hemorrhage, third trimester

O4433 Partial placenta previa with hemorrhage, third trimester

O6012X0 Preterm labor second trimester with preterm delivery second trimester, not applicable or unspecified

O6012X1 Preterm labor second trimester with preterm delivery second trimester, fetus 1

O6012X2 Preterm labor second trimester with preterm delivery second trimester, fetus 2

O6012X3 Preterm labor second trimester with preterm delivery second trimester, fetus 3

O6012X4 Preterm labor second trimester with preterm delivery second trimester, fetus 4

O6012X5 Preterm labor second trimester with preterm delivery second trimester, fetus 5

O6012X9 Preterm labor second trimester with preterm delivery second trimester, other fetus

O6013X0 Preterm labor second trimester with preterm delivery third trimester, not applicable or unspecified

O6013X1 Preterm labor second trimester with preterm delivery third trimester, fetus 1

O6013X2 Preterm labor second trimester with preterm delivery third trimester, fetus 2

O6013X3 Preterm labor second trimester with preterm delivery third trimester, fetus 3

O6013X4 Preterm labor second trimester with preterm delivery third trimester, fetus 4

O6013X5 Preterm labor second trimester with preterm delivery third trimester, fetus 5

O6013X9 Preterm labor second trimester with preterm delivery third trimester, other fetus

O6014X0 Preterm labor third trimester with preterm delivery third trimester, not applicable or unspecified

O6014X1 Preterm labor third trimester with preterm delivery third trimester, fetus 1

O6014X2 Preterm labor third trimester with preterm delivery third trimester, fetus 2

O6014X3 Preterm labor third trimester with preterm delivery third trimester, fetus 3

O6014X4 Preterm labor third trimester with preterm delivery third trimester, fetus 4

O6014X5 Preterm labor third trimester with preterm delivery third trimester, fetus 5

O6014X9 Preterm labor third trimester with preterm delivery third trimester, other fetus

O632 Delayed delivery of second twin, triplet, etc.

O641XX0 Obstructed labor due to breech presentation, not applicable or unspecified

|         |  |
|---------|--|
| O641XX1 | Obstructed labor due to breech presentation, fetus 1                     |
| O641XX2 | Obstructed labor due to breech presentation, fetus 2                     |
| O641XX3 | Obstructed labor due to breech presentation, fetus 3                     |
| O641XX4 | Obstructed labor due to breech presentation, fetus 4                     |
| O641XX5 | Obstructed labor due to breech presentation, fetus 5                     |
| O641XX9 | Obstructed labor due to breech presentation, other fetus                 |
| O642XX0 | Obstructed labor due to face presentation, not applicable or unspecified |
| O642XX1 | Obstructed labor due to face presentation, fetus 1                       |
| O642XX2 | Obstructed labor due to face presentation, fetus 2                       |
| O642XX3 | Obstructed labor due to face presentation, fetus 3                       |
| O642XX4 | Obstructed labor due to face presentation, fetus 4                       |
| O642XX5 | Obstructed labor due to face presentation, fetus 5                       |
| O642XX9 | Obstructed labor due to face presentation, other fetus                   |
| O643XX0 | Obstructed labor due to brow presentation, not applicable or unspecified |
| O643XX1 | Obstructed labor due to brow presentation, fetus 1                       |
| O643XX2 | Obstructed labor due to brow presentation, fetus 2                       |
| O643XX3 | Obstructed labor due to brow presentation, fetus 3                       |
| O643XX4 | Obstructed labor due to brow presentation, fetus 4                       |
| O643XX5 | Obstructed labor due to brow presentation, fetus 5                       |
| O643XX9 | Obstructed labor due to brow presentation, other fetus                   |
| O661    | Obstructed labor due to locked twins                                     |
| O666    | Obstructed labor due to other multiple fetuses                           |
| Z371    | Single stillbirth  |
| Z372    | Twins, both liveborn   |
| Z373    | Twins, one liveborn and one stillborn                                    |
| Z374    | Twins, both stillborn  |
| Z3750   | Multiple births, unspecified, all liveborn                               |
| Z3751   | Triplets, all liveborn   |
| Z3752   | Quadruplets, all liveborn  |
| Z3753   | Quintuplets, all liveborn  |
| Z3754   | Sextuplets, all liveborn   |
| Z3759   | Other multiple births, all liveborn                                      |
| Z3760   | Multiple births, unspecified, some liveborn                              |
| Z3761   | Triplets, some liveborn  |

|       |                                      |
|-------|--------------------------------------|
| Z3762 | Quadruplets, some liveborn           |
| Z3763 | Quintuplets, some liveborn           |
| Z3764 | Sextuplets, some liveborn            |
| Z3769 | Other multiple births, some liveborn |
| Z377  | Other multiple births, all stillborn |

**Data Elements:**

- Admission Date
- Birthdate
- Discharge Date
- Gestational Age
- ICD-10-CM Principal Diagnosis Code
- ICD-10-CM Other Diagnosis Codes
- Previous Live Births
- Risk Adjustment: No.

**Data Collection Approach:** Retrospective data sources for required data elements include administrative data and medical records.

**Data Accuracy:** Variation may exist in the assignment of ICD-10 codes; therefore, coding practices may require evaluation to ensure consistency.

**Measure Analysis Suggestions:** In order to identify areas for improvement, hospitals may want to review results based on specific ICD-10 codes or patient populations. Data could then be analyzed further determine specific patterns or trends to help reduce cesarean births.

**Topic: Severe Maternal Morbidity (SMM) among C-Section cases**

**Outcome measure formula**

**Numerator:** Among the denominator, all cases with any SMM code

**Denominator:** All mothers during their birth admission, excluding ectopics and miscarriages, meeting 1 of the following criteria:

- C-Section as method of delivery

**The rate is typically displayed as:**

All cases with any SMM code / All mothers meeting denominator criteria

**Metric recommendations**

Limit your denominator to C-Sections performed without indication (term, singleton baby in a vertex position) since this sub APSS is specific to unnecessary C-Sections

**Direct Impact:** All patients who deliver by C-Section

**Lives Spared Harm:** Live Spared Harm = (SMM Rate baseline - SMM Rate measurement) X Denominator Procedures measurement

**Note:** Since this is a morbidity measure, the lives saved calculation is not applicable.

## Measuring Outcomes

### Topic: Unnecessary C-Sections

**Serious Safety Event (SSE) Rate:** Rate of Unnecessary C-Sections per 10,000 qualifying births

### Outcome Measure Formula

**Numerator:** Nulliparous women with a term, singleton baby in a vertex position delivered live by cesarean birth

**Denominator:** Total number of nulliparous women with a term, singleton baby in a vertex position delivered live by vaginal or cesarean birth

**Rate is typically displayed as:** Unnecessary cesarean deliveries per 10,000 qualifying births

### Metric recommendations

**Direct Impact:** All qualifying patients who deliver by C-Section

**Elimination of patient harm:** As measured by elimination of serious safety events, sentinel events, state reportable events, or hospital acquired conditions (HACs).

### Lives spared harm:

*Lives spared harm =*

*(Rate of Unnecessary C-Sections<sub>baseline</sub> - Rate of Unnecessary C-Sections<sub>measurement</sub>) X qualifying births<sub>measurement</sub>*

### Lives saved:

*Lives saved =*

*(Unnecessary C-Sections mortality rate<sub>baseline</sub> - Unnecessary C-Sections mortality rate<sub>measurement</sub>) X Unnecessary C-Sections<sub>measurement</sub>*

Mortality SSEs are coded. If the organization codes the severity of their events, this formula could be applied to their data set.

### Notes

To determine whether a birth qualifies for inclusion in the denominator, look in the patient's chart for confirmation of nulliparity and a delivery of a newborn with 37 weeks or more of gestation completed, as well as an ICD-10-CM Principal Diagnosis Code or ICD-10-CM Other

### Diagnosis Codes for outcome of delivery:

Z370 Single live birth

### And the following ICD-10-PCS Principal Procedure Code or ICD-10-PCS Other Procedure Codes for delivery:

10D00Z0 - 10D00Z2, 10D07Z3-10D07Z8, 10E0XZZ

**To determine whether a birth qualifies for inclusion in the numerator, look in the patient's chart for confirmation of nulliparity and a delivery of a newborn with 37 weeks or more of gestation completed, as well as an ICD-10-CM Principal Diagnosis Code or ICD-10-CM Other Diagnosis Codes for outcome of delivery:**

Z370 Single live birth

**And the following ICD-10-PCS Principal Procedure Code or ICD-10-PCS Other Procedure Codes for delivery:**

10D00Z0 - 10D00Z2

**Excluded Populations:**

**ICD-10-CM Principal Diagnosis Code or ICD-10-CM Other Diagnosis Codes for multiple gestations and other presentations:** O30001-O30003, O30011-O30013, O30031-O30033, O30041-O30043, O30091-O30093, O30101-O30103, O30111-O30113, O30121-O30123, O30131-O30133, O30191-O30193, O30201-O30203, O30211-O30213, O30221-O30223, O30231-O30233, O30291-O30293, O30801-O30803, O30811-O30813, O30821-O30823, O30831-O30833, O30891-O30893, O3091-O3093, O3111X0-O3111X5, O3111X9, O3112X0-O3112X5, O3112X9, O3113X0-O3113X5, O3113X9, O3121X0-O3121X5, O3121X9, O3122X0-O3122X5, O3122X9, O3123X0-O3123X5, O3123X9, O318X10-O318X15, O318X19, O318X20-O318X25, O318X29, O318X30-O318X35, O318X39, O321XX0-O321XX5, O321XX9, O322XX0-O322XX5, O322XX9, O323XX0-O323XX5, O323XX9, O328XX0-O328XX5, O328XX9, O329XX0-O329XX5, O329XX9, O34211-O34212, O34219, O364XX0-O364XX5, O364XX9, O4403, O4413, O4423, O4433, O6012X0-O6012X5, O6012X9, O6013X0-O6013X5, O6013X9, O6014X0-O6014X5, O6014X9, O632, O641XX0-O641XX5, O641XX9, O642XX0-O642XX5, O642XX9, O643XX0-O643XX5, O643XX9, O661, O666, Z371-Z374,Z3750-Z3754,Z3759-Z3764,Z3769,Z377

- Less than 8 years of age
- Greater than or equal to 65 years of age
- Length of Stay >120 days
- Gestational Age < 37 weeks or UTD

**Data Collection:** Manual chart review of events to determine if an event is a serious safety event.

**Settings:** All inpatient and outpatient settings.

**Mortality (will be calculated by the Patient Safety Movement Foundation):**

The PSMF, when available, will use the mortality rates associated with Hospital Acquired Conditions targeted in the Partnership for Patient’s grant funded Hospital Engagement Networks (HEN). The program targeted 10 hospital acquired conditions to reduce medical harm and costs of care. “At the outset of the PFP initiative, HHS agencies contributed their expertise to developing a measurement strategy by which to track national progress in patient safety—both in general and specifically related to the preventable HACs being addressed by the PFP.

In conjunction with CMS’s overall leadership of the PFP, AHRQ has helped coordinate development and use of the national measurement strategy. The results using this national measurement strategy have been referred to as the “AHRQ National Scorecard,” which provides summary data on the national HAC rate.

## Conflicts of interest disclosure

The Patient Safety Movement Foundation partners with as many stakeholders as possible to focus on how to address patient safety challenges. The recommendations in the APSS are developed by workgroups that may include patient safety experts, healthcare technology professionals, hospital leaders, patient advocates, and medical technology industry volunteers.

Some of the APSSs recommend technologies that are offered by companies involved in the Patient Safety Movement Foundation. The workgroups have concluded, based on available evidence, that these technologies work to address APSS patient safety issues. Workgroup members are required to disclose any potential conflicts of interest.

\*This Workgroup member has reported a financial interest in an organization that provides a medical product or technology recommended in the Technology Plan for this APSS.

# Workgroup

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