Opening Slide (slide 1)
Welcome to the AIM eLearning Module 4: Safe Reduction of Primary Cesarean Births: Supporting Intended Vaginal Births Safety Bundle - Response, To Every Labor Challenge

Learning Objectives: Response~ To Every Labor Challenge (slide 2)
Upon completion of this activity you will:
1. Understand the need for an in-house care provider which guarantees timely and effective responses to labor problems.
2. Identify use of standardized evidence-based labor algorithms, policies, and techniques, which provide support for intended vaginal births.
3. Review policies that outline standard responses to abnormal fetal heart rate patterns and uterine activity.

Response ~ To Every Labor Challenge (slide 3)
The third domain of the Safe Reduction of Primary C/S: Supporting Intended Vaginal Births Safety Bundle is Response to every labor challenge and contains 5 key elements which are recommended every birthing unit should have and as outlined on this slide. We will review each of these elements in detail as we move through this eLearning module.

1. In-house coverage which guarantees timely and effective responses to labor problems (slide 4)
The first key strategy to labor response is having available an in-house maternity care provider or alternative coverage which guarantees timely and effective responses to labor problems. It is recommended that every facility that delivers babies consider alternative coverage programs such as Laborist Models and Physician /CNM Collaborative Practice Models.

The Laborist Model has trained obstetrician physically available 24 hours a day, on labor and delivery, with no assigned tasks or responsibilities elsewhere, to manage all patients who present to labor and delivery. Laborist models of care promote on-site readiness, remove the time-based and economic incentives to perform cesareans, and lend to the retention of core knowledge and skills.

1. In-house coverage which guarantees timely and effective responses to labor problems (slide 5)
Midwife and Physician model emphasizes fostering and enhancing collaborative practice between certified nurse-midwives (CNMs) and obstetrician-gynecologists. The philosophy of midwives is to maximize a women’s opportunity to have a healthy birth using their own natural physiology while avoiding unnecessary procedures that may interfere with that process. The Midwife and Physician collaborative practice model of care has shown to improve health care outcomes, is cost-effective, and enhances the satisfaction of everyone involved in health care, including the laboring woman.

Optimal Models of Care (slide 6)
In an ideal world, the patient’s primary obstetric provider would be immediately available. In reality, and dependent on individual facility structure, the in-house clinician can be any one of these people or even one that has not been identified on this slide.

2. **Uphold standardized induction scheduling to ensure proper selection and preparation of women undergoing induction** (slide 7)
The 2nd key strategy to response to labor challenges and promoting vaginal birth is to uphold standardized induction scheduling to ensure proper selection and preparation of women undergoing induction. Recent “before-after” studies have examined the effects of labor induction policies on cesarean rates. These studies, which evaluate the impact of specific quality improvement activities on rates of cesareans in specific practice settings, have revealed that rates of cesareans dropped significantly after implementing policies to limit non-medically indicated induction of labor to 39 weeks and greater.

**Induction of Labor** (slide 8)
Induction of labor is a common and essential element of the contemporary obstetric practice and now accounts for approximately 20% of all deliveries. After nearly 20 years of consecutive increases, induction of labor for singleton births reached a high of 23.8% in 2010, then declined through 2012 to 23.3%. Induction of labor in the absence of maternal or fetal indications is thought to be associated with an increase in the risk of cesarean delivery both for nulliparous and multiparous women. This has been demonstrated both for inductions on medical grounds and for elective inductions.

**Induction – cesarean factors** (slide 9)
Many factors affect the risk of cesarean after the decision for induction of labor has been made. These factors vary by provider and by facility. How induction is managed, therefore, may be the determining factor for whether the risk of cesarean is increased. For example, whether cervical ripening is used when the cervix is unfavorable, and whether adequate time is allowed for the woman to progress into the active phase of labor before diagnosing a “failed induction” will affect the likelihood of cesarean.

**Induction – cesarean factors** (slide 10)
The “physician effect,” meaning the impact of an individual physician, affected by the facility’s management style, has also been noted as an independent risk factor for cesareans. This is important to consider because, given the increased length of latent labor in induced women as compared to their spontaneously laboring counterparts, patience by the provider and the facility is critical to determining the outcome when labor is induced.

**Safe Prevention of the Primary Cesarean Delivery** (slide 11)
The ACOG SMFM Obstetric Care Consensus Guidelines on Safe Prevention of the Primary Cesarean Delivery gives clear guidance for the selection of appropriate candidates for induction of labor.
They outline that before 41 0/7 completed weeks of gestation, induction of labor generally should be performed based on maternal and fetal medical indications.

And that inductions at 41 0/7 weeks of gestation and beyond should be performed to reduce the risk of cesarean delivery and the risk of perinatal morbidity and mortality.

Cervical ripening methods should be used when labor is induced in women with an unfavorable cervix.

If the maternal and fetal status allow, cesarean deliveries for failed induction of labor in the latent phase can be avoided by allowing longer durations of the latent phase (up to 24 hours or longer) and requiring that oxytocin be administered for at least 12-18 hours after membrane rupture before deeming the induction a failure.

**Bishop Score** (slide 12)
The Bishop score is a tool originally used to identify multiparous women at term who were likely to enter spontaneous labor and is now more often used to determine cervical ripeness. The literature generally defines “unfavorable cervix” as a Bishop score of 6 or less, while a Bishop score of 8 or greater indicates a likelihood of vaginal birth after labor induction. It is recommended that women undergoing induction of labor without a favorable cervix receive cervical ripening prior to starting oxytocin.

**Prevention of the First Cesarean Birth** (slide 13)
2012 Consensus guidelines to prevent the first cesarean birth recommended that facilities should have clear policies regarding labor induction, including a list of acceptable indications, and should specify the definitions of a favorable cervix, options for cervical ripening in the presence of an unripe cervix, oxytocin infusion protocols, and criteria for the diagnosis of failed induction”.
You may find examples of induction policies using the link at the top of this page, or in the resources at the conclusion of this eLearning module.

3. Utilize standardized evidence-based labor algorithms, policies, and techniques, which allow for prompt recognition and treatment of dystocia (slide 14)
The 3rd key strategy in the response domain is to utilize standardized evidence-based labor algorithms, policies, and techniques, which allow for prompt recognition and treatment of dystocia.

**Diagnosis of Labor Dystocia** (slide 15)
During normal labor, regular and painful uterine contractions cause progressive dilation and effacement of the cervix, accompanied by descent and eventual delivery of the infant. Dystocia of labor is defined as difficult labor or abnormally slow progress of labor. Other terms that are often used interchangeably with dystocia are "Abnormal labor," “Arrest of Decent or dilatation," and "failure to progress.” These are traditional but imprecise terms that have been used to describe a labor pattern deviating from that observed in the majority of women who have a spontaneous vaginal delivery. These labor abnormalities
are best described as protraction disorders, slower than normal progress, arrest disorders or complete cessation of progress.

**Diagnosis of Labor Dystocia** (slide 16)
Friedman's original research in 1955 defined three stages of labor for the normal labor curves of both nulliparas and multiparas woman. A contemporary labor pattern has since emerged that is somewhat different than reported by Friedman. Research from Zhang and colleagues noted that the fastest rate of cervical dilation begins at 6 cm, and that women laboring at the slowest “normal” rate may take “more than 6 hours to progress from 4 to 5 cm and more than 3 hours to progress from 5 to 6 cm of dilation.” The criteria for normal labor progress established in the 1950s by Friedman—should no longer be used as the parameters to define labor dystocia. The maximal slope in the rate of change of cervical dilation over time often does not start until 6 cm.

**Diagnosis of Labor Dystocia** (slide 17)
Instead, in response to the data on contemporary labor patterns, the Obstetric Care Consensus on Safe Prevention of the Primary Cesarean Delivery has recommended specific guidelines that encourage a more patient approach to first and second stage labor management. Specifically, slow but progressive labor in the first stage is not an indication for cesarean nor is a prolonged latent phase as defined previously by Friedman. It is important to note: the Consortium on Safe Labor data does not directly address an optimal duration for the diagnosis of active phase protraction or labor arrest, but do suggest that neither should be diagnosed before 6 cm of dilation.

**Diagnosis of Labor Dystocia** (slide 18)
It is important to remember that under recent guidelines, progress in labor is defined not only in terms of cervical dilatation but also in reference to cervical effacement and fetal station. Likewise progress in the second stage must consider rotation as well as descent. Furthermore Zhag and colleagues point out using an average as the parameter for guiding labor management decision is not suitable for management of the individual patient. Rather, women should be compared to the longest normal duration, also known as 95th percentile values, for the first and second stages of labor.

**Other factors for longer labors** (slide 19)
Other maternal factors should also be considered before making the diagnosis of labor dystocia. For example, longer labors are more likely in older women, and obese women with BMI equal to or greater than 30. These women are more likely to have an overall longer labor and progress more slowly through the interval between early and active labor (4-6 cm). Epidural anesthesia is also associated with longer first and second stages of labor.

**Diagnosis of Labor Dystocia** (slide 20)
Despite these significant findings and supporting recommendations by the Consortium on Safe Labor, general acceptance of this new labor curve has been slow. Many factors may contribute to this,
including that the definition of prolonged latent phase by Friedman is still widely accepted, that many women are admitted to the hospital before active labor has truly begun and with providers continuing to adhere to a frequent cervical examination schedule of every two hours, even before commencement of active labor. All of these things combined may lead to an overall culture of care where diagnoses of labor dystocia is made far too early.

**Summary of recommendations of labor** (slide 21)
The summary of recommendations from the Obstetric Care Consensus Statement on Safe Prevention of the Primary Cesarean in the First Stage and Second Stage of Labor can be accessed using the resource link on this slide or in a downloadable format at the conclusion of this elearning module.

**Use of Oxytocin** (slide 22)
Intravenous oxytocin is the main pharmacologic agent for induction and augmentation of labor. It is an effective medication but also a “high-alert” medication due to its association with adverse maternal and fetal outcomes. Over the past 50 years, both clinical researchers and providers have struggled with identifying the ideal dosing and minimizing potential complications associated with intrapartum oxytocin administration. Since most complications are associated with uterine activity and are dose-related, recent quality improvement efforts to reduce adverse events related to oxytocin have focused on using lower initial dosing and increasing more slowly until the lowest effective dose has been achieved. Nonetheless, wide variation in oxytocin protocols and administration persists. Furthermore, appropriate diagnosis of labor dystocia is critical to the judicious and appropriate use of oxytocin.

**Oxytocin and arrest of labor** (slide 23)
Studies have indicated that most women with prolonged latent phase of labor will enter the active phase with expectant management. With few exceptions, the remainder either will cease contracting or with artificial rupture of membranes or oxytocin or both, achieve the active phase of labor. Therefore the Obstetric Care Consensus Statement outlines that when the first stage of labor is protracted or arrested, oxytocin is usually recommended. Slow progressive labor in the first stage of labor should not be an indication for cesarean delivery.

**Implement policies for the safe use of oxytocin** (slide 24)
In the past decade, quality improvement programs have provided guidelines for the safe use of oxytocin during labor by minimizing wide variations in dosing and timing. Each hospital's obstetrics department should develop a standardized, single, universal written protocol for the use of oxytocin for labor induction or augmentation. Standardization of an oxytocin infusion protocol is recommended to reduce medication dosing error and improve patient assessment. Many other individual hospitals, hospital systems, the IHI, ACOG, and some state perinatal collaboratives have since created guidelines for the safe use of oxytocin to decrease cesarean birth rates while improving outcomes.

**Implement policies for the safe use of oxytocin** (slide 25)
Elements of an oxytocin protocol should include:

- Indications for the use of oxytocin for labor induction and augmentation.
- Methods for preparation and administration of oxytocin.
- Qualifications of staff authorized to administer oxytocin and monitor patients.
- The level of the initial dose and subsequent doses,
- The timing interval of changes in doses
- A protocol for patient assessment, including definitions of normal and abnormal conditions evaluated by monitoring.
- Methods of managing complications should they develop.

Implement standard diagnostic criteria and algorithms to reduce and respond to labor dystocia (slide 26)

It is recommended that all organizations that deliver babies (Utilize standard diagnostic criteria and algorithms to reduce and respond to labor dystocia. Beyond the definitions and management guidelines set forth by ACOG, the utilization of labor dystocia checklists, labor algorithms or labor duration guidelines to assist in the diagnoses of labor dystocia have been proven valuable in reducing cesarean deliveries. Several resources are available to you from several sources and you may download available resources and tools through the resource tab in this slide, or at the end of this eLearning module.

The American College of Nurse-Midwives Healthy Birth Initiative™ (slide 27)

Additional Resources, including algorithms, checklists and guidelines, to promote Intended Vaginal Births can also be found through The American College of Nurse-Midwives Healthy Birth Initiative™ The American College of Nurse-Midwives has created several tools to support and promote the value of healthy, spontaneous labor and birth.

BirthTOOLS.org (slide 28)

This initiative has developed BirthTOOLS.org, which stands for Tools for Optimizing the Outcomes of Labor Safely, and is an interactive online toolkit that presents the evidence and offers targeted resources, protocols, and other materials to assist clinicians and health care systems in implementing best practices that promote physiologic birth.

4. Adopt policies that outline standard responses to abnormal fetal heart rate patterns and uterine activity (slide 29)

The 4th key strategy to the Safe Reduction of Primary Cesarean Births: Supporting Intended Vaginal Births Safety Bundle Response Domain is to adopt policies that outline standard responses to abnormal fetal heart rate patterns and uterine activity. Understanding what drives the fetal heart rate tracing is key to managing them. This can be accomplished through:

- Implementing Standard Diagnostic Criteria and Standard Responses to Labor Challenges and Fetal Heart Rate Abnormalities
• Endorsing the NICHD categories and standardize responses to abnormal fetal heart rate patterns and uterine activity

**Electronic Fetal Monitoring** (slide 30)
Electronic fetal monitoring (EFM) was introduced in 1958 by Edward Hon at Yale University. It seemed to improve outcomes for preterm births and rapidly became the default method of intrapartum fetal surveillance. Unfortunately, EFM was brought into use before extensive testing and before basic understanding of the relationship between specific fetal heart rate (FHR) patterns and fetal metabolic acidemia. The intent of intrapartum fetal surveillance is to assess uterine activity, fetal well-being, and the fetal heart rate (FHR) response to labor in order to make appropriate, physiologically based clinical decisions.

**Electronic fetal monitoring** (slide 31)
As the use of EFM has increased, so did the rate of cesarean birth, but without an associated decrease in adverse fetal outcomes or mortality. While the evidence regarding clinical benefit of EFM is often conflicting, the relationship of FHR patterns to the increase in cesarean birth is clear.

**NICHD fetal heart rate monitoring terminology** (slide 32)
Because of high inter and intra-observer variability in the interpretation of fetal heart rate tracings, the American College of Obstetricians and Gynecologists, the Society for Maternal-Fetal Medicine, and the United States National Institute of Child Health and Human Development convened a workshop to standardize definitions and interpretation for electronic fetal monitoring and to propose management guidelines.

**NICHD fetal heart rate classification** (slide 33)
Major recommendation from this workshop was a clear standard for FHR interpretation and a three-tier system for the categorization of intrapartum EFM.

**Endorse NICHD categories and standardize responses to abnormal fetal heart rate patterns and uterine activity** (slide 34)
As a Standardized Approach to Interpretation and Management of the laboring woman, endorsement of the NICHD definitions represented the first time that physicians, nurses and midwives all agreed to use the same language. It is recommended that all organizations that deliver babies, endorse NICHD Categories and Standardize Responses to Abnormal Fetal Heart Rate Patterns and Uterine Activity.

**Joint Commission Sentinel Event Alert #30** (slide 35)
In 2004 The Joint Commission issued an alert on Preventing infant death and injury during delivery and recommended that institutions

- Develop clear guidelines for fetal monitoring of potential high-risk patients, including nursing protocols for the interpretation of fetal heart rate tracings and to;
Educate nurses, residents, nurse midwives, and physicians to use standardized terminology to communicate abnormal fetal heart rate tracings. Sadly, 12 years later, we are continuing to identify organizations that lack adoption of standardized EFM guidelines or formal education to support clinical teams with shared knowledge on expected terminology to facilitate team communication.

**Standard responses to fetal heart rate abnormalities (slide 36)**

In 2009, ACOG Practice Bulletin Number 106 outlined clinical management guidelines for Intrapartum Fetal Heart Rate Monitoring: Nomenclature, Interpretation and General Management Principles designed to aid practitioners in decision making and describe a standardized system for Electronic Fetal Monitoring using the 3-tiered classification system.

**Category II fetal heart rate tracings (slide 37)**

Category II fetal heart rate tracings are common and account for more than 80% of intrapartum FHR patterns. Category II fetal heart rate tracings cover a wide spectrum ranging from relatively minor findings to more significant combinations that require very different clinical management, leading to broad variation in care. Category II tracings are challenging to interpret. Over-concern for variable decelerations, despite normal baseline variability and have contributed to increased cesarean rates. However, we know that an under-appreciation of a fetus’s deteriorating status can result in morbidity and at times, mortality.

In 2013, Clark and colleagues published an important article, Intrapartum management of category II fetal heart rate tracings: towards standardization of care, addressing the need for standardizing assessment of Category II FHR tracings. This article defined that there was currently no standard national approach to the management of category II fetal heart rate (FHR) patterns, yet such patterns occur in the majority of fetuses in labor.

**Standard responses to fetal heart rate abnormalities (slide 38)**

Clark and colleagues created an algorithm for the management of category II FHR patterns that reflects a synthesis of available evidence and current scientific thought. Use of this algorithm represents one way for the clinician to comply with the standard of care, and may enhance our overall ability to define the benefits of intrapartum FHR monitoring. Other facilities and perinatal collaboratives have since designed useful algorithms based on the concepts of the Clark model, some with even greater detail.

The common thread shared by these algorithms is the initiation of clinical decision making based on the presence or absence of moderate variability and/or accelerations. Both are highly predictive of normal acid-base status, allowing the provider to immediately identify FHR patterns that may require birth to be expedited.

**Role of the nurse and response to FHR tracings (slide 39)**
The Association of Women’s Health, Obstetric and Neonatal Nurses asserts that the availability of registered nurses and other health care professionals who are skilled in fetal heart monitoring techniques, including auscultation and electronic fetal monitoring, is essential to maternal and fetal well-being during antepartum, labor, and birth. Fetal heart monitoring requires advanced assessment and clinical judgment skills and should not be delegated to unlicensed assistive personnel or others who do not possess the appropriate licensure, education, and skills validation.

**Role of the nurse and response to FHR tracings** (slide 40)
AWHONN also supports use the standardized, descriptive NICHD terms and recommends the development of interprofessional institutional policies, procedures, and guidelines that outline responsibility for ongoing fetal heart rate monitoring and documentation including:

- A systematic admission assessment of the woman and fetus;
- Ongoing assessments of the woman and fetus including FHR and uterine activity data;
- Interventions provided and evaluation of responses;
- Communication with the woman and her family or primary support person;
- Communication with providers; and Communication within the chain of resolution.

5. Make available special expertise and techniques to lessen the need for abdominal delivery, such as breech version, instrumented delivery, and twin delivery protocols (slide 41)
The 5th and final key element in the response domain of the Safe Reduction of Primary C/S: Supporting Intended Vaginal Births Safety Bundle is to make available special expertise and techniques to lessen the need for abdominal delivery, such as breech version, instrumented delivery, and twin delivery protocols. This can be accomplished through

- Utilizing operative vaginal delivery in eligible cases and through
- Identify malposition and implement appropriate interventions

**Identify malposition and implement appropriate interventions** (slide 42)
In the Recognition domain of this eLearning Module we reviewed how Fetal presentation should be assessed and documented beginning at 36 0/7 weeks of gestation to allow for external cephalic version to be offered.

**Identify malposition** (slide 43)
Identification of malposition during labor, particularly by the early part of the second stage is an important aspect of preventing cesarean. There are various ways to identify the malpositioned fetus. Ultrasound is the most accurate approach. Studies in the second stage have reported digital examination error rates of 26% to 39% compared to the gold standard of abdominal ultrasound.

**Utilize operative vaginal delivery in eligible cases** (slide 44)
Historically, forceps rotation of the fetal occiput from occiput posterior or transverse was common practice. Today this procedure, although still considered a reasonable management approach, has fallen out of favor and is rarely taught in the United States. When performed by a well-trained, experienced physician, and on a fetus not believed to be macrosomic, judicious use of operative vaginal delivery offers a safe alternative to cesarean birth for the management of second stage abnormalities such as fetal intolerance or dystocia due to maternal exhaustion. Such procedures may safely prevent a cesarean birth in most eligible cases with less than 3% of attempted operative vaginal deliveries reported proceeding to a cesarean.

**Utilize operative vaginal delivery in eligible cases** (slide 45)
Unfortunately, training in operative vaginal delivery in many residency programs is decreasing, especially training in the use of forceps. For operative vaginal delivery to be a safe alternative to cesarean, residency programs must encourage and incorporate training, and the skill must be maintained throughout an attending physician’s tenure. Organizations must ensure initial training and ongoing physician competency in forceps and vacuum deliveries. Training options are available including simulation models which allow for practice of operative vaginal delivery techniques.

**Breech presentation and use of external cephalic version (ECV)** (slide 46)
Breech presentation at 37 weeks of gestation and beyond is estimated to complicate up to 4% of pregnancies and more than 85% of pregnant women with persistent breech presentation are delivered by cesarean. In one recent study the rate of attempted external cephalic version was 46% and decreased during the study period. Thus external cephalic version for fetal malpresentation is likely underutilized especially when considering that most patients with successful external cephalic version will give birth vaginally.

Obstetricians should offer and perform ECV whenever possible. When an external cephalic version is planned, there is evidence that success may be enhanced by regional analgesia. Fetal presentation should be assessed and documented beginning at 36 weeks of gestation to allow for external cephalic version to be offered.

**Multiple gestation and breech deliveries** (slide 47)
The Obstetric Consensus on the Safe Prevention of the Primary Cesarean Delivery, outlines that external cephalic version for breech presentation and a trial of labor for women with twin gestation when the first twin is in cephalic presentation are examples of interventions that can contribute to the safe lowering of the primary cesarean birth rate.

**Multiple gestation and breech deliveries** (slide 48)
Before a vaginal breech birth is considered, women need to be educated and informed that there is an increased risk of perinatal or neonatal morbidity and mortality. ACOG has available patient education to
help support the decision to attempt vaginal birth with multiple gestation and breech deliveries and can be found using the resource tab at the top of this slide or at the conclusion of this eLearning module.

**Summary** (slide 49)

In summary:

The third domain of the Safe Reduction of Primary Cesarean Births: Supporting Intended Vaginal Births Safety Bundle is Response to Every Labor Challenge has 5 key elements that every organizations should consider:

1. Having available an in-house maternity care provider or alternative coverage which guarantees timely and effective responses to labor problems.
2. Upholding standardized induction scheduling to ensure proper selection and preparation of women undergoing induction.
3. Utilizing standardized evidence-based labor algorithms, policies, and techniques, which allow for prompt recognition and treatment of dystocia.
4. Adopting policies that outline standard responses to abnormal fetal heart rate patterns and uterine activity and
5. Making available special expertise and techniques to lessen the need for abdominal delivery, such as breech version, instrumented delivery, and twin delivery protocols.

**Resources and References:** Safe Reduction of Primary C/S: Supporting Intended Vaginal Births Safety Bundle (slide 50)

With every AIM eLearning Module you will be provided with links to resources and materials that will support the development of your teams journey to impact change. Please download these resources using the link at the top of this page before leaving the each of the eLearning modules.

**AIM program contact** (slide 51)

Please contact AIM directly with any questions on the materials provided or how we can better support your needs.