Presentation 1

Note to presenter:
The goal of this two-part slide deck is to support hospital clinicians in understanding the importance of standardizing preterm labor assessment and the steps to take to drive change in assessing patients presenting with signs and symptoms of preterm labor.

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Objectives

- Define ‘Toolkit’
- Understand the scale and impact of preterm birth
- Understand how timely assessment can improve neonatal and long-term child health outcomes
- Understand how the March of Dimes Preterm Labor Assessment Toolkit improves quality of care through evidence-based, standardized pathways

Learning objectives for this presentation.
PLAT supports local providers and hospitals by providing practical tools and resources to implement improvements in care.

The toolkit includes materials such as protocols and order sets that are intended to be customized to meet a hospital's specific needs. This approach benefits local providers and hospitals who would otherwise face the burden of developing these materials themselves.
The March of Dimes Preterm Labor Assessment Toolkit was developed to support clinical staff at hospitals with accomplishing this goal in a step-by-step manner. By addressing assessment of women with symptoms of preterm labor, we believe this toolkit complements recent publications from the American College of Obstetricians and Gynecologists (ACOG) related to:

a) screening and management of asymptomatic women at risk of preterm labor and

b) management of women with confirmed preterm labor.
The scale of preterm birth:

- Approximately 4 million babies are born each year in the United States.
- 11.7 percent are born prematurely. This represents a 8.6% decrease since 2006, following a 20 percent increase since the early 1990s (see graph on slide).
- The U.S. preterm birth rate is higher than that of most other developed countries.
- Improving outcomes in early preterm birth (<34 weeks) is the sub-group of added emphasis for society and medical professionals due to the significant morbidities, mortality, and health care costs associated with these vulnerable children.
Spontaneous preterm labor is the single largest cause of preterm birth (40%-45%). Its symptoms may include vaginal bleeding with an increase in vaginal mucous discharge for 2 days or more with or without uterine contractions.

Many women have symptoms of preterm labor for more than 2 days prior to delivery, allowing time for interventions that can improve outcomes for the baby:

- Implementation of risk-appropriate care for BOTH mother and baby, such as notification of the NICU team or maternal transport to a higher level of care
- Administration of antenatal corticosteroids

In this graph, indicated (30-35%) includes elective preterm deliveries.

- Tighter protocols for the timing of elective inductions and C-sections could eliminate most of these iatrogenic preterm birth cases. (Download the Elimination of Non-medically Indicated (Elective) Deliveries Before 39 Weeks Gestational Age; Quality Improvement Toolkit at prematurityprevention.org)
This slide lists the most common risk factors for preterm delivery.

- Previous preterm birth is the most significant predictor of a subsequent preterm delivery.
- The presence of fetal fibronectin (fFN) or a short cervix on transvaginal ultrasound (TVU) have been associated with preterm birth.
- Many of these risk factors, such as age or ethnic group, are inherent and cannot be modified. Other risk factors, such as smoking and concurrent medical conditions, can be improved through appropriate interventions.

- If assessing preterm delivery risk based on symptoms and physical examination alone is often inaccurate, then which additional factors are associated with preterm birth?
- Even if preventing preterm birth is not possible, the ability to identify those women most at risk for preterm labor may improve neonatal outcomes by allowing timely interventions, such as antenatal corticosteroids.

Additional References:
Case 1
ACOG Practice Bulletin 127, June 2012 uses the clinical criteria listed on this slide to define preterm labor.

Hospitals adopting a standardized definition of preterm labor aid in consistent assessment of women presenting with signs and symptoms of preterm labor.

One acknowledged challenge is the difficulty identifying women with preterm labor who will ultimately give birth prematurely. As noted in ACOG Practice Bulletin No 127, “The assessment of preterm delivery risk based on symptoms and physical examination alone is inaccurate.” (See references below). As a result, preterm delivery will not occur in 50% of women hospitalized with preterm labor.

Additional References:


Interventions That Do Reduce Risks Associated with Preterm Birth

Preventing preterm birth:
- Progesterone administration has been shown to be effective in reducing the risk of preterm birth in specific populations:
  - Intramuscular progesterone to asymptomatic women with a history of spontaneous preterm birth
  - Vaginal progesterone to asymptomatic women at high risk of preterm labor due to a transvaginal ultrasound of a very short cervix (< 20 mm) before or at 24 weeks gestation
- Prophylactic cervical cerclage also has been reported to reduce the rate of preterm birth in special situations.

Preparing for preterm birth can improve outcomes:
- Antenatal corticosteroids
- Short-term tocolytic agents
- Transport to a tertiary care facility

A KEY SLIDE

Interventions that can prevent preterm birth:
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  - Vaginal progesterone to asymptomatic women at high risk of preterm labor due to a transvaginal ultrasound of a very short cervix (< 20 mm) before or at 24 weeks gestation
- Prophylactic cervical cerclage also has been reported to reduce the rate of preterm birth in special situations.

Interventions that prepare at-risk women for preterm delivery can improve outcomes:
- Per ACOG, antenatal corticosteroids are “the most beneficial intervention for patients in true preterm labor”, significantly reducing mortality and morbidities for infants born prematurely, particularly those born prior to 32 weeks gestation. Antenatal steroids are recommended between 24 weeks and 34 weeks gestation when there is risk of preterm delivery within 7 days.
- Short-term tocolytic drugs may prolong gestation long enough to administer corticosteroids, assemble the neonatal team, or allow transport to a facility with a neonatal intensive care unit.
- Magnesium sulfate has been shown to be effective in reducing the severity and risk of cerebral palsy if administered when birth is anticipated before 32 weeks gestation (ACOG Practice Bulletin 127).
KEY POINT: National efforts are seeking to improve the appropriate utilization of ACS following nearly 20 years of provider education efforts since the NIH Consensus Statement, “Effect of corticosteroids for fetal maturation on perinatal outcomes” was published in 1994.

Recent national actions include:

- The Joint Commission added Antenatal Steroids as a perinatal care core measure that will be reported by hospitals as an indicator of quality of care.

- ACOG Committee Opinion 475 in 2011 made clear recommendations related to antenatal corticosteroids:
  - A single course of corticosteroids is recommended for pregnant women between 24 weeks of gestation and 34 weeks of gestation who are at risk of preterm delivery within 7 days.
  - A single course of repeat antenatal corticosteroids should be considered in women whose prior course of antenatal corticosteroids was administered at least 7 days previously and who remain at risk of preterm delivery before 34 weeks of gestation.

- While the effects of ACS on the mother may be minimal, women with diabetes may require close glycemic management.
**KEY POINT:** ACS use in appropriate patients significantly reduces prematurity-related mortality as well as every known major morbidty.

- The benefit of identifying and treating women at high risk of preterm delivery is clear, as demonstrated by this metaanalysis of 21 studies (3,885 women and 4,269 infants; published by the Cochrane Database). The data in this table illustrate significantly improved outcomes for babies whose mothers received ACS prior to delivery.
- Based on well-established value, ACOG recommends antenatal corticosteroids between 24 weeks and 34 weeks gestation when there is risk of preterm delivery within 7 days.
- Standardized assessment and management of preterm labor symptoms can improve identification of those women who are most likely to benefit from ACS treatment.
Case 2
KEY POINT: There are clear challenges to providing appropriate interventions, such as ACS, due to the difficulty identifying women with preterm labor who will ultimately give birth prematurely.

- Uterine contractions pose a challenge. As noted in ACOG Practice Bulletin No 127, “the assessment of preterm delivery risk based on symptoms and physical examination alone is inaccurate.”
  - Changes in the uterus and cervix occur as pregnancy progresses to term.
  - In preterm labor, cervical ripening and decidual activation occur earlier than uterine contractions and may be difficult to detect.
  - Thus, per Iams, it is not uncommon that diagnosis of preterm labor is established based on the high-threshold criteria of six or more uterine contractions per hour, cervical dilation ≥3 cm, and 80 percent effacement accompanied either by vaginal bleeding or rupture of fetal membranes.
  - At this point, delivery may be inevitable, yielding insufficient time to prepare the fetus for premature birth.
- As a low-threshold criterion, uterine contractions alone are a poor positive predictor of true preterm labor. They will occur four or more times an hour in up to 25 percent of pregnancies <32 weeks.
- Many women diagnosed with preterm labor based solely on the high-threshold criterion of six or more uterine contractions per hour will deliver at term.
This slide demonstrates some of the limitations providers face when using preterm contractions and variable assessment as a basis for predicting which women are at risk for preterm labor.

It is reported that hospital triage units are inconsistent, with high variation in assessment and management of women with symptoms of preterm labor.

In this study by Hueston, care provided by obstetricians, family practice physicians and residents at community hospitals in a large network was reviewed retrospectively.

Findings include:
   - Many women (76%) who did not have cervical change were nonetheless admitted to receive tocolytics. The majority delivered at term.
2. Under-treatment: Low utilization of antenatal steroids in women at high risk.
   - A very low percentage (only 33%) of women who delivered preterm received antenatal corticosteroids, meaning 67% of premature infants did not benefit from steroids in this study.

**KEY POINT:** The failure to consistently utilize antenatal corticosteroids in patients at risk for preterm birth represents a significant missed opportunity to improve neonatal outcomes.
KEY POINT: Given the ‘real life’ challenges of triage assessment, as noted in the previous slide, PLAT seeks to assist providers and hospitals in providing standardized assessment of women at risk for preterm labor, which allows for timely decision-making and interventions.

- Pregnancies identified as increased risk for preterm birth can receive higher levels of care such as antenatal corticosteroids, tocolytics, and/or admission/maternal transport.
- Pregnancies identified as decreased risk for preterm birth (including the majority of women with preterm labor symptoms) can receive more limited interventions that are risk-appropriate, such as increased surveillance as an outpatient.
- Standardized assessment is crucial, as wide variations in the assessment of preterm labor symptoms result in disparities in health outcomes.

Additional References:
   Standardization resulted in: an 11% decrease in antepartum admissions; 20% decrease in length of stay; 15% reduction in tocolytic prescriptions; 1.2% increase in antenatal steroid use. One hospital experienced a total L&D cost savings of $416,120 a year instituting a standardized triage assessment less the cost of fFN implementation and testing.
   Standardizing triage demonstrated an algorithm NPV of 99.2% (96% to 100%) with a mean gestational age at delivery after assessment of 38 weeks, 3 days and an average interval between assessment and delivery of 57.4 days, resulting in a 56% reduction in admission rates. On a national scale, a reduction by 56% in antepartum admissions for preterm labor would result in an estimated cost savings of $560 million annually (based on the estimated cost of a 48-hour hospitalization for patients ultimately discharged undelivered).
Given the impact of preterm labor on maternal child health, as well as the challenges with diagnosis, PLAT seeks to assist providers and hospitals in standardizing assessment of women at risk for preterm labor, as this allows for timely decision-making and interventions.

Additionally, PLAT seeks to assist hospitals in reducing unnecessary interventions and treatments when preterm birth is unlikely.
March of Dimes Preterm Labor Assessment Toolkit (PLAT) aims to ensure that cervical changes are uniformly assessed in women presenting with signs and symptoms of preterm labor. Uniform practices lead to appropriate disposition decisions.

The algorithm, protocol and tools outlined in PLAT drive change in assessment behaviors (purple arrow), resulting in appropriate disposition decisions (red box). These, in turn, lead to improved outcomes.
During the past decade, implementation of standardized protocols has significantly reduced adverse perinatal outcomes.

Elimination of elective delivery before 39 weeks is the endpoint that has received greatest attention in hospital-based, regional and statewide systems-change projects. Policies and procedures that have been developed and lessons learned in the course of implementing these projects suggest possible steps for reducing the incidence of preterm birth.

Prior to publication of PLAT in 2005, the potential of a programmatic or quality improvement approach for reducing the volume of unnecessary treatment and/or admissions for preterm labor had not been explored. While much had been written about evaluating an individual patient’s risk of preterm labor, a systems approach was absent.

The current PLAT revision draws upon March of Dimes experience with implementation of the original PLAT in 40 California hospitals with varying levels of care, as well as evolving best practices as documented in the research literature. The goals of PLAT are presented in this slide.

Additionally, PLAT also can be used to incorporate The Joint Commission’s Third Perinatal Care Core Measure, administration of antenatal corticosteroids to women at risk for preterm labor.

Value of Standardized Assessment

- Identifying those patients in true labor will benefit all women who present in triage with signs and symptoms of suspected preterm labor
- Hospitals providing all levels of care will achieve the following outcomes within a relatively brief timeframe:
  - Timely and appropriate interventions
  - Optimal maternal-fetal safety
  - Hospitalization of only those patients at greatest risk for preterm delivery
  - Effective transport of preterm labor patients to higher, more appropriate levels of care
  - Avoidance of unnecessary treatments, interventions and medications
KEY POINT: PLAT assists providers and hospitals in providing standardized assessment of women with symptoms of preterm labor and assessment of possible risks for preterm birth, which allows for timely decision-making and interventions.

- PLAT facilitates provider decisions to admit, discharge or transport a patient to a higher level of care. This can occur promptly, within 2 to 4 hours, depending on patient status and local resources.
- First, women should have a standardized assessment to diagnose preterm labor using the clinical criteria described by ACOG.
- Second, for women who do not meet the clinical criteria for PTL noted above, standardized assessment for risk factors associated with preterm birth increases the opportunity for risk-appropriate interventions.
- This assessment for risk of preterm birth includes a thorough patient history including prior preterm birth, medical screening exam and electronic fetal monitoring. Risk assessment is facilitated by two objective evaluation tools: transvaginal ultrasound (TVU) and fetal fibronectin testing (fFN).
KEY POINT: Cervical length, measured by Transvaginal Ultrasound (TVU), is a biomarker for risk assessment.

- As a negative predictor of preterm delivery: TVU cervical length greater than 25 to 30 mm is widely considered to be low likelihood of preterm birth.

- As a positive predictor of preterm delivery: TVU with “short” cervical length ≤20 mm is widely considered to be high risk for preterm birth.

IMAGES: The top image on the left illustrates a normal cervix measures by TVU; the distance from internal os to external os is 37 mm. The bottom image illustrates a short cervix of 19 mm with evidence of funneling.


- This graph is from the landmark work by Iams and colleagues, illustrating the relationship of cervical length to risk of preterm birth in asymptomatic patients. Iams et al conducted a multicenter study to measure the length of the cervix and examine the relation of this measurement to the risk of spontaneous preterm birth. They examined 2915 women at 24 weeks gestation and then again at approximately 28 weeks (n=2531); the women were outpatients without signs of preterm labor.

- The graph shows the estimated probability of spontaneous preterm birth before 35 weeks gestation from the logistic-regression analysis (dashed line) and the observed frequency of spontaneous preterm birth (solid line) according to cervical length measured at 24 weeks.

- The probability of spontaneous preterm birth increased with decreasing cervical length.

Additional References:
3. In women with contractions, a cervical length less than 15 mm was associated with a 37%-47% chance of delivering within 7 days. (Tsoi E et al. Ultrasound Obstet Gynecol. 2003;21(6):552-555; Fuchs I et al. Ultrasound Obstet Gynecol. 2004;24(5):554-557.)
**KEY POINT:** TVU can provide valuable information to guide risk assessment for preterm birth.

- Data on this table indicates TVU measurement associated with probability of preterm birth at or before 32 weeks for women with prior preterm birth. Weeks 15 to 28 are listed across the X axis of the table; cervical length, in millimeters, is identified along the Y axis. (Iams JD, Berghella V. Am J Obstet Gynecol. Aug 2010;203[2]:89-100.)

For example, at 26 weeks gestation, the two numbers circled in red represent the preterm birth risk associated with two different TVU measurements:

- **Increased risk:** TVU cervical length of 15 mm is associated with a 16.2% risk of delivery prior to 32 weeks.
- **Decreased risk:** TVU cervical length of 45 mm is associated with only 1.5% risk of delivery prior to 32 weeks.

- This 16.2% level of increased risk of preterm birth can facilitate decision-making regarding interventions such as steroids. The use of similar risk levels to guide interventions is well accepted in Ob/Gyn.

- For example, there is recent discussion regarding the potential benefit of daily vaginal progesterone to reduce the rate of preterm birth. This is based on information that asymptomatic women with a short cervical length on TVU between 16 and 24 weeks gestation have an approximately 16% risk of preterm birth at less than 33 weeks gestation if not treated. (ACOG Practice Bulletin No 130. Obstet Gynecol 2012;120(4): 964-73.)
TVU — Contraindications and Limitations

- Invalid <15 weeks and >28 weeks
- Steep learning curve — inability to recognize landmarks
- Vaginal bleeding (some instances)
- Central placenta previa
- Excessive probe pressure
- Filled maternal bladder
- Limited access to appropriate TVU equipment and trained staff in some hospitals

- TVU is not a valid test for patients less than 15 weeks gestational age as the lower uterine segment may not be fully developed, and the internal os cannot be well visualized. After 28 weeks, changes in cervical length may be physiologic and better determined by direct examination of the cervix using SVE.
- To properly image the cervix and measure accurately, the ultrasound operator must be familiar with certain landmarks and be able to observe them.
- Vaginal bleeding, if present, needs prior assessment to determine the probable cause prior to introducing the vaginal transducer into the vaginal vault.
- Central placenta previa, if actively bleeding, may contraindicate placement of the vaginal transducer into the vaginal vault. Undue trauma to the cervix may provoke bleeding.
- Excessive probe pressure and over-filled maternal bladder can interfere with the interpretation of cervical length as shown on the previous slide.
- Not all OB practices or hospitals have the technical expertise available or access to TVU 24/7, which can limit diagnosis and treatment options.
**KEY POINT:** While transvaginal cervical length is a well-validated screen to predict preterm birth, providers must also be aware of the need for appropriate training and technique to correctly interpret TVU. Many incorrectly assume that this is a relatively “simple” transvaginal ultrasound.

- Failure to perform the TVU properly can result in incorrect assessment. For example, excess pressure on the probe on a dilated cervix can lead to pressing the cervix closed.

- Take a closer look at the scan images in this slide:
  - Both images were obtained during one TVU assessment of a woman who was at 25 weeks gestation.
  - The image on the left that appears to be an “abnormal” scan is accurate, including the dilation of internal os, significant funneling, and short cervix.
  - The image on the right that appears to be “normal” scan is inaccurate. While the image conveys a closed cervix and normal length, this image was in fact obtained only 17 seconds after the “abnormal” image. This resulted from excess pressure with the ultrasound probe against the cervix.
  - In this case, the excess pressure was intentionally applied to illustrate that TVU technical skills are crucial.
KEY POINT: Fetal fibronectin can provide valuable risk assessment information related to preterm birth.

Fetal fibronectin (fFN) is a biomarker screen associated with risk of preterm labor ≤34 weeks of gestation.

- A protein related to cellular cohesiveness, fFN is concentrated at the membrane-decidua interface. During weeks 22 to 35 of a normal pregnancy, it is virtually undetectable in vaginal secretions below a threshold of 50 ng/ml.
- Disruption of the interface releases fFN, which can be detected via an assay that permits results to be reported back to the provider within 1 hour.

Risk assessment by fFN:

- Increased risk: A positive fFN has a positive predictive value (PPV) of 13 percent to 40 percent for delivery within 14 days, indicating increased risk of preterm birth. Note that this range of reported PPVs is an artifact of the diverse populations of women included in the various studies.
- Decreased risk: A negative fFN has a negative predictive value (NPV) of 95 percent to 99.5 percent, between 24 and 33 weeks, for delivery within 7 to 14 days, indicating decreased risk of preterm birth.

Similar to risk assessment using TVU measurement of the cervix, the fFN PPV and NPV can assist risk assessment and facilitate decision-making regarding risk-appropriate interventions that seek to optimize maternal-newborn care.
Limitations of Fetal fibronectin (fFN) Test

- Not a valid test for patients less than 24 weeks gestation or patients over 34 weeks gestation.
- Samples should not be collected in the setting of vaginal bleeding, prior intercourse and/or SVE within last 24 hours, cervix ≥3 cm dilated, bulging membranes, PPROM or open cervical/vaginal lesions.

This is a summary of main points prior to transition to detailed slides on the Toolkit and Algorithm.

March of Dimes Preterm Labor Assessment Toolkit (PLAT) aims to assist providers and hospitals in providing standardized assessment of women with symptoms of preterm labor and possible risk for preterm birth, as this allows for timely decision-making and interventions.
Implementation and evaluation of PLAT in hospitals throughout California from 2005 to 2012 informed the revision of PLAT in 2013.
A prompt assessment of women with signs or symptoms of preterm labor is essential. Following a standardized approach will result in timely patient assessment, management decisions and appropriate interventions.

This is the assessment algorithm, the core of PLAT. Some hospitals have elected to enlarge the algorithm and post it in their triage rooms for easy reference. The next five slides will walk you through the algorithm and protocol.
Upon presentation in triage with signs and symptoms of preterm labor, the patient will be evaluated expediently, per hospital policy and procedures. Using PLAT, a disposition should be arrived at within 2 to 4 hours. Once objective data have been provided, the results should be acted upon with confidence.
To reiterate, given the impact of preterm labor on maternal child health, as well as the challenges with diagnosis, PLAT seeks to assist providers and hospitals in providing standardized assessment of women at risk for preterm labor as this allows for timely decision-making and interventions.

One goal of PLAT is improve neonatal outcomes by identifying women at risk for preterm labor in order to allow opportunities for timely interventions and provide appropriate treatment when needed. A second goal is to reduce unnecessary intervention and treatment when preterm birth is unlikely.
When preterm labor is identified by clinical criteria or a very short cervix, then a sequence of care pathways is promptly activated.

PLAT recommends activating the positive care pathway based on contractions accompanied by:

1. Initial exam on presentation with cervical dilation of at least 2 cm AND/OR
2. Short cervix ≤ 20 mm long by TVU between 20 and 28 weeks OR
3. Repeat Sterile Vaginal Exam notes a change in cervix (dilation and/or effacement)

Then:
1. Notify provider
2. Administer antenatal corticosteroids if between 24 and 34 weeks gestation
3. Initiate short-term tocolytic therapy, if ordered by provider
4. Admit as inpatient/prepare for transport
5. Activate intervention pathways (e.g., cerclage, vaginal progesterone), if appropriate

*Assumes intact membranes.

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Step 2: Disposition
Option A — Preterm Labor is Identified

If regular uterine contractions are accompanied by:

- a) Initial SVE with cervical dilation of at least 2 cm AND/OR
- b) Short cervix ≤ 20 mm long by TVU between 20 and 28 weeks OR
- c) Repeat SVE notes change in cervix (dilation and/or effacement)

Then:
1. Notify provider
2. Administer antenatal corticosteroids if between 24 and 34 weeks gestation
3. Initiate short-term tocolytic therapy, if ordered by provider
4. Admit as inpatient/prepare for transport
5. Activate intervention pathways (e.g., cerclage, vaginal progesterone), if appropriate

*march of dimes*
For women who do not meet the clinical criteria for preterm labor noted in the prior slide, standardized assessment for risk factors associated with preterm birth allows consideration of risk-appropriate interventions.

Examples of risk factors associated with preterm birth include prior preterm birth, short cervical length identified by transvaginal ultrasound and/or presence of fetal fibronectin.

When risk factors for preterm birth are identified, a second sequence of care pathways and reassessment can be activated.

This model is based on the favorable risk-to-benefit ratio of interventions such as antenatal corticosteroids and increased frequency of assessment for the development of preterm labor diagnostic criteria.

To address a common question: When screening tests results conflict with each other (e.g., one test is positive while the second test is negative), then consider the patient as being at increased risk for preterm labor, even though a false positive is possible.
When negative test results are obtained, a risk-appropriate care pathway is activated.

A standardized approach will result in discharging patients with confidence and provides an opportunity for education.

- Provide patient education materials and home care instructions (see toolkit for samples).
- Follow-up of these patients within one week is important to assess and monitor preterm birth risk factors, as a negative screen has limitations.
If the evaluation of preterm labor symptoms is limited to monitoring uterine contractions and performing a physical exam, then it is important to repeat SVE in 2 hours to ascertain that no cervical change has occurred prior to considering discharge.

A standardized approach will result in discharging patients with confidence and provides an opportunity for education.

- Provide patient education and home care instructions (see toolkit for samples).
- Follow-up of these patients within 1 week is equally important to assess and monitor preterm birth risk factors, as a negative exam has limitations.

If there is perceived cervical change that meets the diagnostic criteria for preterm labor, timely interventions should be set in motion immediately. The decision to admit or transport should be made within 2 to 4 hours.
Assessment of symptomatic preterm labor patients before the 24th week of pregnancy is challenging.

If no complications are identified, serial SVEs may be conducted. However, cervical change may be a late symptom of preterm labor or cervical insufficiency. And fFN is not approved for this early gestational age.

Therefore, before 24 gestational weeks, TVU is the best tool to assess whether a woman is at risk of preterm labor.

If TVU findings are positive, several options are recommended, as noted on the slide.

In addition, intramuscular progesterone 250 mg/week has been found to decrease the rate of repeat singleton preterm delivery. It has not been consistently shown to benefit multiple gestations.
Assessment of symptomatic patients is challenging in terms of medical care, as well as managing patient expectations. Despite physical discomfort, prodromal contractions and early cervical change often do not progress into active labor. Ancillary tests such as fFN and TVU provide limited added value at these gestational ages. Assessment can begin with cervical examination. If no evidence of active labor, then serial SVE at least 2 hours apart may detect cervical change. If cervical change is detected but has not progressed to active labor, then obstetric intervention is not necessary. There is no data to support intervention for prodromal labor. Unless there is an obstetric indication, induction or augmentation of labor may be construed as elective interventions. Elective delivery prior to 39 weeks is associated with increased maternal and neonatal morbidities, as noted in many studies. It is recommended to allow the latency period to progress naturally, as there is a likelihood that cervical change may not progress beyond the initial assessment. Educating the patient and her family members helps to manage expectations and allow informed decision-making. Additional information is available in the toolkit.
IMPLEMENTATION
Hospitals may choose to address preterm labor assessment as a quality improvement project, as PLAT was developed to support systems change initiatives. Many quality improvement methodologies have been developed. One approach, the Mobilize, Assess, Plan, Implement, Track (MAP-IT) cycle, can be utilized to drive preterm labor assessment standardization. Steps in the MAP-IT cycle are listed chronologically in the toolkit. A hospital also may choose to use the PDSA approach or other quality improvement methodologies.
Mobilize
- To overcome barriers that may be institutionalized in a hospital’s culture, an administrator, a physician and a nurse champion need to be identified as ambassadors for the initiative.

Assess
- Conducting a baseline survey will assist in identifying current practices and educational and equipment needs.
- A maternal transport process and agreements, if needed, must be in place before the initiative can be introduced as a quality improvement measure.
- Education needs are met by either grand rounds presentations or one or more town hall Q & A sessions. If the nursing staff is not skilled in performing sterile speculum exams, a link to web-based didactic education is included in PLAT, along with a link to skill certification checklists.
- Finally, perform a review of patient education materials and home care instructions and update if necessary.
A sample Order Set is available in PLAT and may be downloaded from prematurityprevention.org for use at your facility.
PLAT outlines March of Dimes patient education materials that are available for use by any facility. It is critical that each patient understand the importance of recognizing and reporting signs and symptoms of preterm labor. Early detection and diagnosis may provide just the time window needed for essential clinical interventions such as antenatal corticosteroids, maternal transport to a higher level of care, or assembly of the high-risk team.
Sample home care instructions in English and Spanish for patients not in preterm labor are included in PLAT, and can be downloaded from prematurityprevention.org.

These home care instructions are not intended to discourage a patient from coming back to the hospital if signs and symptoms of preterm labor persist. Instead, they are designed to teach patients what to look for and when to call their health care provider.

Instructions also direct the patient to contact their regular health care provider to make an appointment in 1 week and discuss their signs and symptoms of preterm labor and their hospital assessment.
Implement

- Convene department meetings to build buy-in
- Conduct clinical staff trainings
- Hold kickoff event on rollout start date

Track progress

- Collect and analyze data to track adherence to patient assessment pathway

Implement

- To help establish consensus and buy-in, convene department meetings to discuss changes in protocol.

Track Progress

- Collect data to help inform progress in standardizing preterm labor assessment.
Chart audit affords the deepest dive into assessing practice by hospital department and/or individual practitioner. It also is the most time-consuming method of assessment. March of Dimes used this tool to assess departmental practice change and the effectiveness of PLAT during the pilot project evaluation. The chart audit tool can be downloaded at prematurityprevention.org.
There are a variety of ways to measure progress. A facility’s choice of metrics depends on the availability and ease of data collection. This slide lists five measures that may be evaluated. In the following slides, we identify more readily available data points that could be used to monitor departmental progress.
ICD-9 (ICD-10)/CPT/HPCPS codes are available for:
- Presentation for preterm labor
- fFN
- TVU
- ACS administration

ICD-9 (ICD-10), CPT and/or HPCPS codes can be used to identify the number of patients presenting with the chief complaint of preterm labor. Other codes can help to determine the percentage of fetal fibronectin samples collected, TVU utilization and antenatal corticosteroid administration. These indicators will provide a broad-sweep picture of preterm labor assessment practices and can be used to compare before and after indicators and departmental adherence to the algorithm. Although they do not measure all aspects of the algorithm, changes in values over time will suggest changes in a department’s practice.
• **Identify passionate nursing and physician champions.**
  Hospital leaders often must balance many QI projects or change processes at the same time. Therefore, it is essential to have committed champions to carry the initiative forward.

• **Collecting baseline data to support the need for new or revised policies and procedures is a significant contributor to moving the change process forward.**
  Baseline data help to demonstrate need and highlight problematic areas that may otherwise be hard to detect or pinpoint.

• **Initiate the change process as a quality improvement project.**
  Using metrics and measurement tools to track progress allows for the department, staff and physicians to see improvements.

• **Use a checklist to track progress.**
  An implementation checklist helps to keep the champions focused.

• **Allow for time and repetition.**
  Communicate with and educate staff and physicians often over the course of planning and implementing the initiative.
Additional Implementation Resources

March of Dimes Nursing Modules • marchofdimes.com/nursing
• Intrapartum Nursing Management of Preterm Labor (online CE module)

Competencies:
• Sterile Speculum Exam Training
  American College of Nurse-Midwives
  midwife.org/Intrapartum-Sterile-Speculum-Examination
• Transvaginal Ultrasound Assessment of the Cervix and Prediction of Spontaneous Preterm Birth
  uptodate.com (Search Transvaginal Ultrasound Assessment. Full article available to subscribers only.)
To reiterate, given the impact of preterm labor on maternal child health, as well as the challenges with diagnosis, PLAT seeks to assist providers and hospitals in providing standardized assessment of women at risk for preterm labor as this allows for timely decision-making and interventions.

One goal of PLAT is improve neonatal outcomes by identifying women at risk for preterm labor in order to allow opportunities for timely interventions and provide appropriate treatment when needed. A second goal is to reduce unnecessary intervention and treatment when preterm birth is unlikely.
Thank You

Working together for stronger, healthier babies

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