WELCOME to Cervical Ripening/Pitocin Inductions

NEBRASKA METHODIST COLLEGE
The Josie Harper Campus
Learning Center

Cervical Ripening and Induction/Augmentation of Labor - Live Only

1

Housekeeping

- Please silence or turn cell phones off
- Refreshments are in the back of the room please help yourselves
- Breaks
  - Bathroom locations
  - Breastfeeding mothers
- Laptop plug ins
- Explanation of Handouts
- Refrigerator ☺☺☺☺☺

2

Continuing Education Hours

- You must attend the entire program. No partial credit can be awarded.
- You must complete an evaluation (it will be emailed to you). It must be completed within 7 business days after the program date or you will receive an incomplete.
- A link to access your certificate will be automatically generated and emailed to you within 24 hours of completing all requirements. Go to our website: www.methodistcollege.edu/pd , then click “Account Login” on the top right side of the page. Log in to your account, then click “Certificates.”
- If you have any questions or need assistance, please email Nebraska Methodist College Learning Center at lc@methodistcollege.edu .

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Continuing Education Hours

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Successful Completion Requirements: In order to obtain contact hours or continuing education credit for this educational activity, participants are required to complete stated requirements:

Attendance at the entire activity

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Relevant Financial Relationships with an Ineligible Company: No relevant financial relationships were identified for planners or presenters.

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Special Thanks to Sue Weekly

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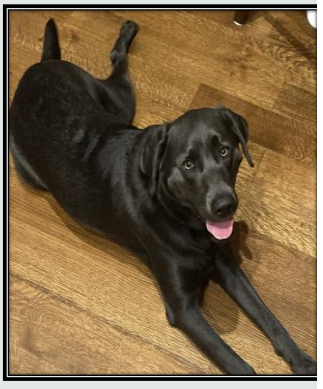


Kayla Brickell MSN, C-EFM, RNC-OB, RNC-IAP, C-OBE

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MARY SEGER BARKER, MSN, RNC-OB, C-EFM, CIMI

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Program Objectives

- Explore the induction of labor to include: methods, definitions, indications and contraindications, possible risks, informed consent and assessments prior to induction
- Identify the nursing role in providing care during cervical ripening and induction/augmentation of labor
- Review the pharmacological properties of prostaglandins and oxytocin
- Compare/contrast methods for cervical ripening
- Explain the procedure of administration of oxytocin for augmentation/induction
- Describe the physiology of uterine contractions
- Describe the phases and stages of labor

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To Access the Agenda(s) and QR for Online Presentations

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Content presented through this educational program is intended to be used as a knowledge base only. Subject matter presented is not to be taken in isolation and outside the realm of patient's clinical context. Any written and or verbal didactic is to be used in conjunction with the healthcare workers own knowledge base and clinical judgment. Clinicians are highly encouraged to consider the entire clinical picture in which the patient presents before and during their care of him and or her.

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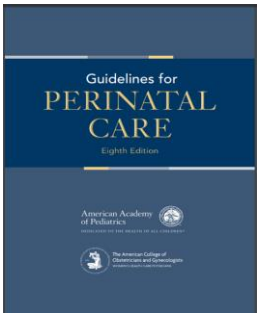
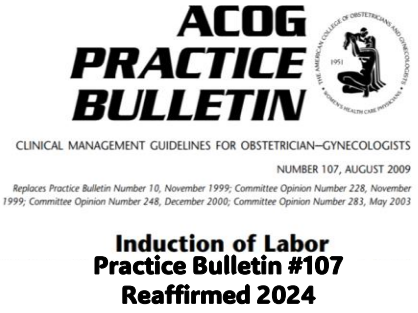
•Professional Standards and Guidelines Related to Induction/Augmentation of Labor





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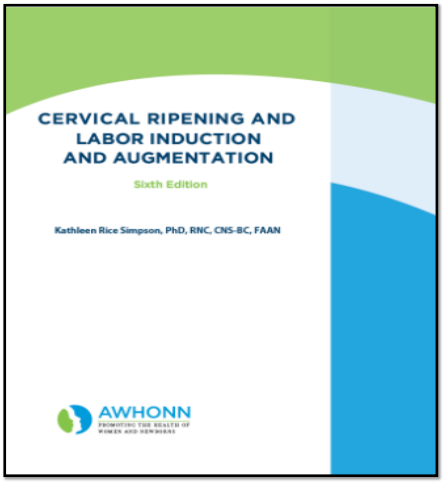
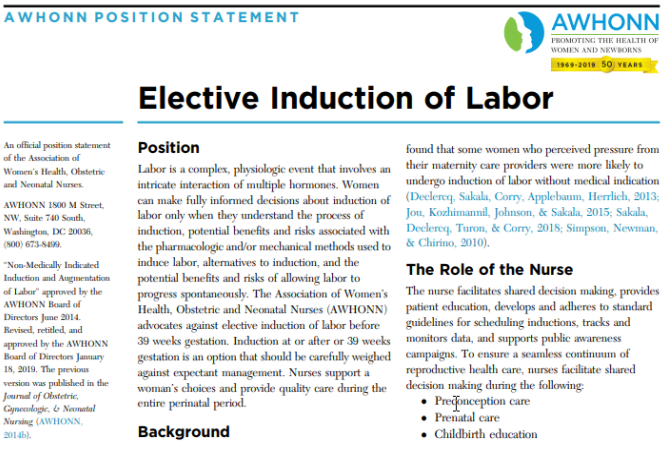
AWHONN Documents




AWHONN POSITION STATEMENT

AWHONN
PROMOTING THE HEALTH OF WOMEN AND NEWBORNS
1969-2019 50 YEARS

Elective Induction of Labor

An official position statement of the Association of Women's Health, Obstetric and Neonatal Nurses.

AWHONN 1800 M Street, NW, Suite 740 South, Washington, DC 20036, (800) 673-8499.

"Non-Medically Indicated Induction and Augmentation of Labor" approved by the AWHONN Board of Directors June 2014. Revised, retitled, and approved by the AWHONN Board of Directors January 18, 2019. The previous version was published in the *Journal of Obstetric, Gynecologic, & Neonatal Nursing* (AWHONN, 2014b).

Position

Labor is a complex, physiologic event that involves an intricate interaction of multiple hormones. Women can make fully informed decisions about induction of labor only when they understand the process of induction, potential benefits and risks associated with the pharmacologic and/or mechanical methods used to induce labor, alternatives to induction, and the potential benefits and risks of allowing labor to progress spontaneously. The Association of Women's Health, Obstetric and Neonatal Nurses (AWHONN) advocates against elective induction of labor before 39 weeks gestation. Induction at or after or 39 weeks gestation is an option that should be carefully weighed against expectant management. Nurses support a woman's choices and provide quality care during the entire perinatal period.

Background

found that some women who perceived pressure from their maternity care providers were more likely to undergo induction of labor without medical indication (Declercq, Sakala, Corry, Applebaum, Herrlich, 2013; Jou, Kozhimannil, Johnson, & Sakala, 2015; Sakala, Declercq, Turon, & Corry, 2018; Simpson, Newman, & Chirino, 2010).

The Role of the Nurse

The nurse facilitates shared decision making, provides patient education, develops and adheres to standard guidelines for scheduling inductions, tracks and monitors data, and supports public awareness campaigns. To ensure a seamless continuum of reproductive health care, nurses facilitate shared decision making during the following:

- Preconception care
- Prenatal care
- Childbirth education

Additional resources listed in reference list..

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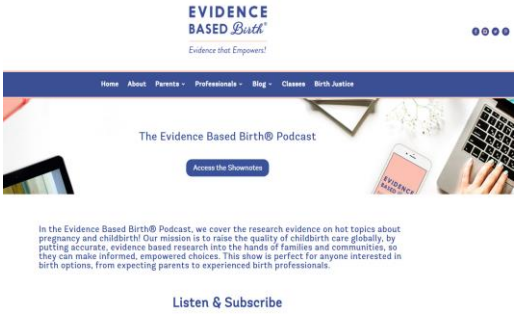
Suggested online resources

- https://clinicalconceptsinob.com

- https://evidencebasedbirth.com



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- https://www.awhonn.org/podcast/

- https://ncc-efm.org/game/efmgame.cfm

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Menti.com

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- **Code: Or 8976 1617**
- **Scan the QR Code Below**

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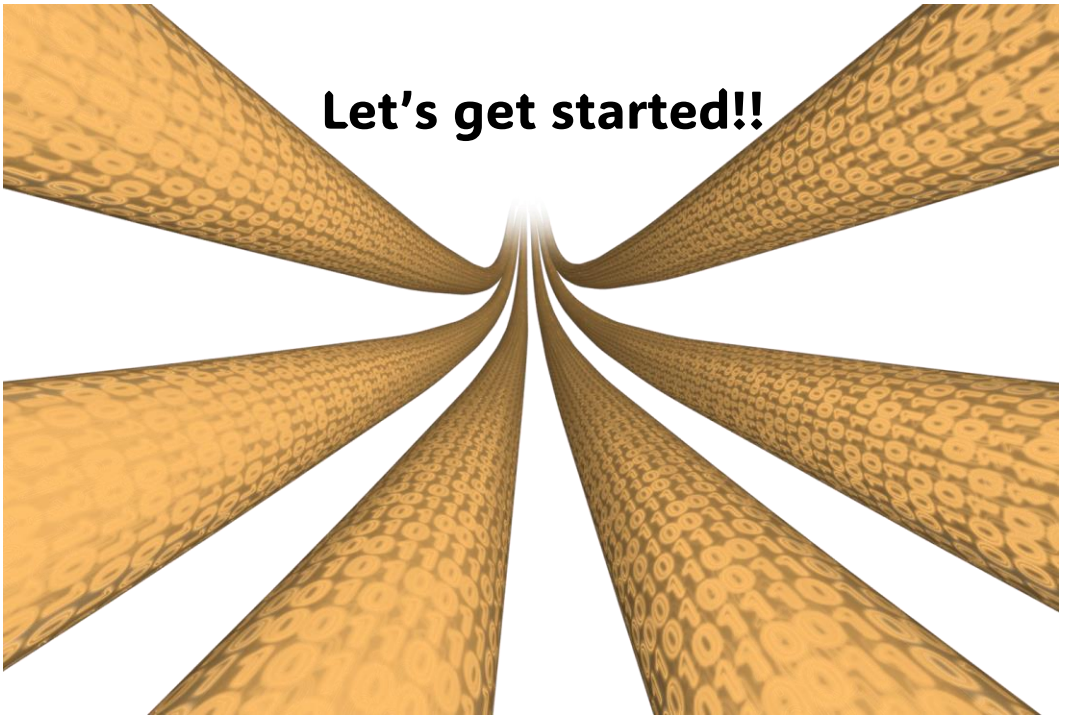

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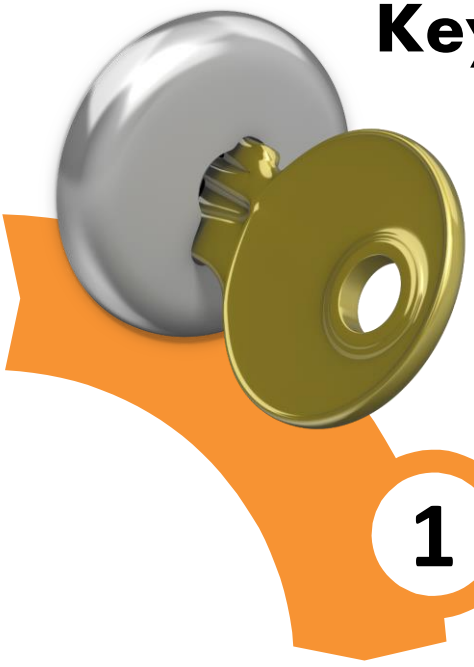
Key Concepts



I titrate Pitocin According to:

Labor Progress

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I Titrate Pitocin according to:

Maternal Response

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I Titrate Pitocin according to:

Fetal Response

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Remember:

- Look at the entire clinical picture
- Think of the oxygen pathway

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Let's Review.....

- **New Code: 5389 5962**

Menti.com

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What percent of pregnant women will undergo induction???

- **The frequency of labor induction in the United States was 31.4 percent in 2020, more than tripling since 1990 when it was 9.5**

Induction of labor with oxytocin – UpToDate 2024

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True or False

- **Pitocin is one of the most commonly used drugs in the United States.**

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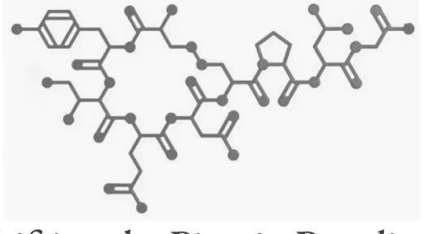

Shifting the Pitocin Paradigm

Jen Atkisson RNC-OB, MSN, CNL

January 2024

Themes in Lawsuits

High association with preventable harm→ 88% of cases

#1 Lack of timely recognition and treatment of Pitocin-induced excessive uterine activity

#2 Continuing infusion with worrisome fetal heart rate pattern

#3 Unnecessary increases with adequate UC

#4 Lack of pt ed/informed consent

CDC, 2021; AHRQ, 2016; Harvard, 2017

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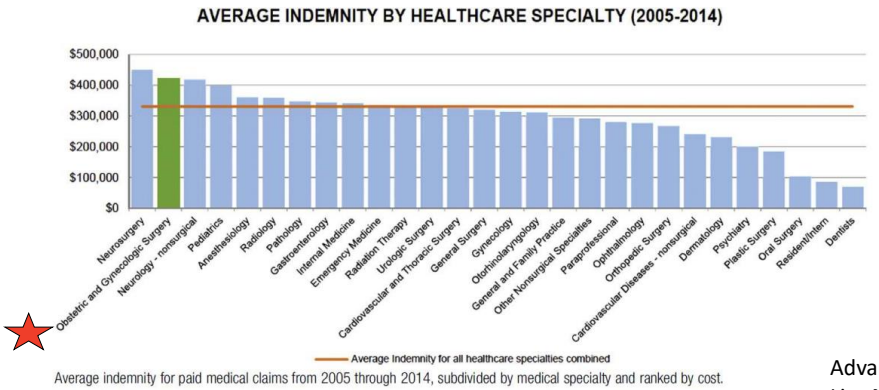
Not always best to be 1st or 2nd in Obstetrics

OBSTETRICS PRACTICE REMAINS HIGH LIABILITY



Average indemnity for paid medical claims from 2005 through 2014, subdivided by medical specialty and ranked by cost.

Glaser et al. Trends in obstetric and gynecologic malpractice claims. Am J Obstet Gynecol 2017.

Advanced Fetal Monitoring
Lisa Miller, 10-2021

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Legal Implications

- What do you think is one of the obs and payout??

Pitocin Administration

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Available Electronic Fetal Monitor Management Models

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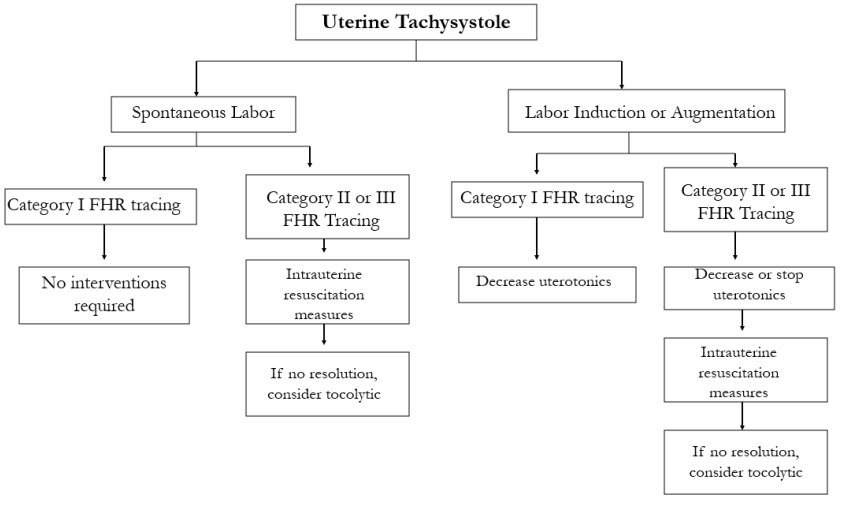
Uterine Tachysystole ACOG 2010



ACOG Practice Bulletin No. 116, Management of Intrapartum Fetal Heart Rate Tracings, Nov 2010, reaffirmed 2021

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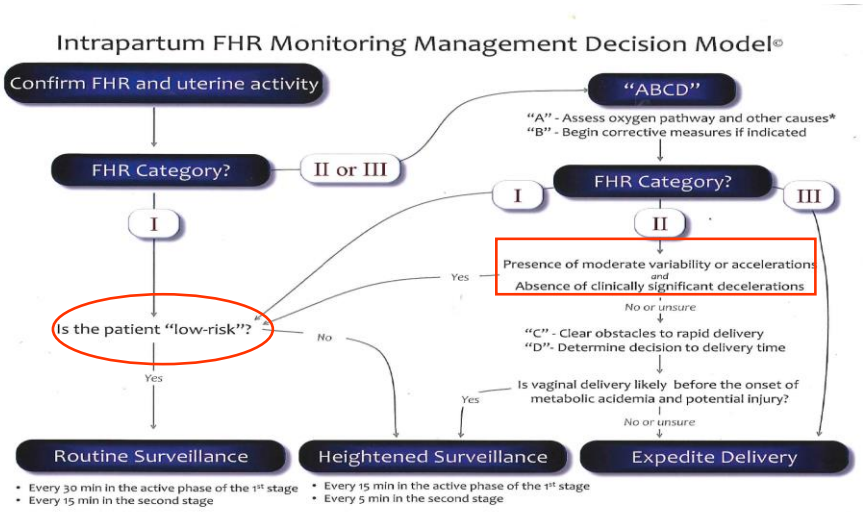

Reproduced with permission from Dr. David Miller's presentation *Safer and Easier Establishing a Shared Mental Model in EFM*.(2013).
14th Annual National Conference on Fetal Monitoring Maternal-Fetal Assessment and Interventions

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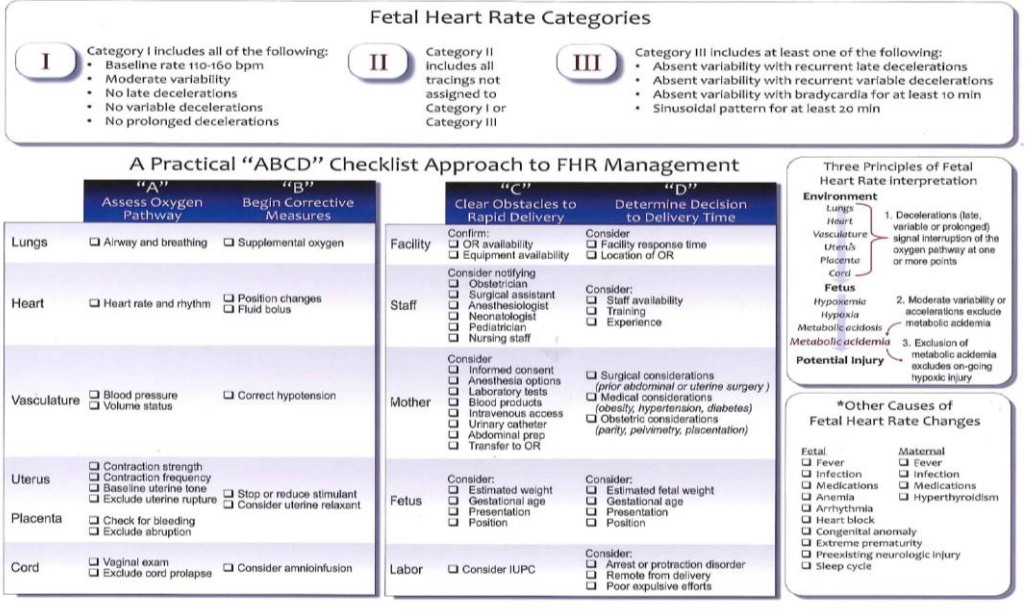

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14th Annual National Conference on Fetal Monitoring Maternal-Fetal Assessment and Interventions

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A Standardized Approach for Category II Fetal Heart Rate with Significant Decelerations: Maternal and Neonatal Outcomes

Laurence E. Shields, MD[1,2] Suzanne Wiesner, RN, MBA[2] Catherine Klein, RN, CNM[2]
Barbara Pelletreau, RN, MPH[2] Herman L. Hedriana, MD[3]

Abstract

Objective To determine if a standardized intervention process for Category II fetal heart rates (FHRs) with significant decels (SigDecels) would improve neonatal outcome and to determine the impact on mode of delivery rates.

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The standardized approach was based on FHR Variability & the presence of recurrent "Significant" FHR decelerations

Variability defined per NICHD criteria: Moderate & Marked or Minimal/ Absent

Significant Decelerations were defined as any late, recurrent prolonged or significant variables (60 seconds wide & either 60 beats below baseline or below 60 beats per minute

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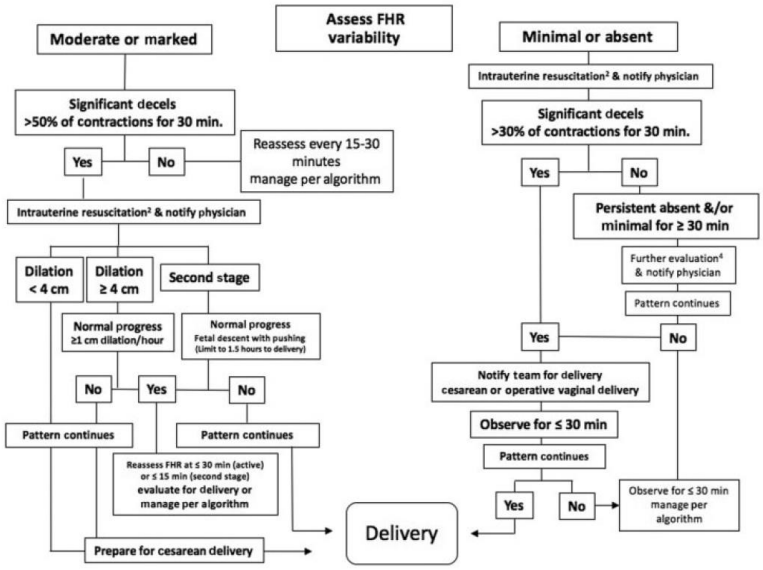

Fig. 1 Management outline for patients with Category II fetal heart rates associated with "significant decelerations" and normal fetal heart rate variability (moderate or marked) and abnormal variability (minimal or absent). FHR, fetal heart rate. Notes: 1. Resuscitative Measures may include: repositioning, O_2 (10L via mask), IV bolus, correction of hypotension. 2. Additional Interventions: consider amnioinfusion for variable decels. 3. Scalp stimulation and/or vibroacoustic stimulation.

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Results Post implementation there were 8,515 eligible deliveries, 3,799 (44.6%) were screened, and 361 (9.5%) met criteria for recurrent SigDecels. Compliance with the algorithm was 97.8%. The algorithm recommended delivery in 68.0% of cases. Relative to pre-implementation, 5-minute APGAR score of <7 were reduced by 24.6% ($p < 0.05$) and severe UNC by −26.6%, $p = < .05$. The rate of primary cesarean decreased (19.8 vs 18.3%, $p < 0.05$), while there were nonsignificant increases in vaginal (74.6 vs 75.8%, $p = 0.13$) and operative vaginal births (5.7 vs 5.9%, $p = 0.6$).

Conclusion Standardized management of recurrent SigDecels reduced the rate of 5-minute APGAR scores of < 7 and severe UNC.

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ACOG Definitions

What is considered full term for an infant?	What is considered early term for an infant?	What is considered late preterm for an infant?

Late Preterm	Early Term	Full Term	Late Term	Post-term
34.0 – 36.6 weeks gestation	37.0-38.6 weeks gestation	39.0-40.6 weeks gestation	41.0-41.6 weeks gestation	>42.0 weeks gestation

ACOG Definition of Term Pregnancy Committee Opinion No. 579 2013, reaffirmed 2022

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Guidelines for Perinatal Care (2019)

"Elective inductions are not performed before 39 weeks of gestation" (p. 243)

- AAP & ACOG (2019 reaffirmed 2021)

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Why is this so important??

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What Neonatal Morbidities are Associated with Early-Term Deliveries?

- **Hypoglycemia**
- **Respiratory Distress Syndrome**
- **Apgar <7**
- **Transfer to the NICU**
- **Ventilator use**
- **Pneumonia**

ACOG Avoidance of non-medically indicated early-term deliveries and associated neonatal morbidities. Committee Opinion N0. 765 2019 reaffirmed 2021

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Section I

Physiology of Labor
Stages & Phases of Labor
Labor Curves

40

Labor Definition

The process by which the fetus is expelled from the uterus

Requires regular, effective contractions that lead to dilation & effacement of the cervix

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How do we decide labor onset??

A retrospective diagnosis that is defined by the initiation of regular painful contractions of sufficient duration and intensity to result in cervical dilation or effacement

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The process is not fully understood & exact mechanism is still UNKNOWN

How does the body spontaneously initiate labor??

An integrated set changes within the maternal tissues that occur gradually over days or weeks

- Happening in the myometrium, decidua and cervix

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What are the 5 "P"s

- **Power**-the uterine contractions
- **Passage**- size, shape & joint mobility of the pelvis; the stretch of the vaginal canal
- **Passenger**- size & shape of fetal head, fetal presentation & position
- **Pain**- how is the patient coping
- **Psyche**- anxiety & emotional state of the women

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Two types of oxytocin receptors in the uterus

Myometrium

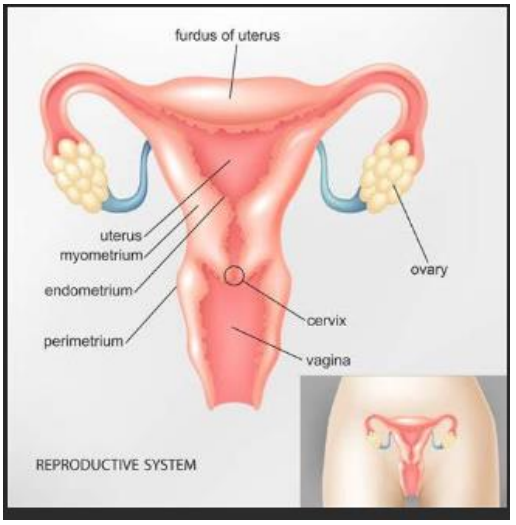
- Middle layer of the uterus; main function is to induce uterine contractions

Cervix (releases prostaglandins)

- Must lose its resistance; undergoes rapid changes in labor (ripening, effacement and dilation)

Decidua (releases prostaglandins)

- Mucosal lining of the endometrium



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Oxytocin/Pitocin is one of the few hormones that creates a positive feedback loop

When oxytocin is released, it stimulates uterine contractions, and these uterine contractions, in turn, cause more oxytocin to be released; this is what causes the increase in both the intensity and frequency of contractions

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Types of contractions & Characteristics

Prelabor (Non-progressing contractions)

- Remain the same over time
- May stop and then start back up
- Preparing the cervix for dilation

Labor

- Progressing pattern
- Becoming longer
- Stronger
- Closer together

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Which takes longer… Spontaneous or Induced Labor?

Spontaneous labors are shorter in duration than induced labor

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Let's talk labor

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Stages and Phases of Labor

How many Stages of labor are there??

What are the phases of labor??

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Stages of Labor

Stage I
- 0-10cm
- Has 2 phases

Stage II
- 10cm to delivery of baby

Stage III
- Delivery of baby to delivery of placenta

Stage IV
- Immediate pp
- 1-4hours

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Contraction Characteristics

Latent phase (0-5cm)
- May begin with irregular & infrequent contractions (q3-30 min initially)
- Eventually contractions become more regular (3-7 min), lasting 40-70 seconds
- Pt may describe as menstrual cramps or tightening

Active phase (6-10cm)
- Contraction every 2-5 minutes lasting 60-90 seconds;
- Palpate mod- strong (IUPC 50-70 mmHg)
- Pt has increased discomfort

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ACOG | Clinical

Clinical Guidance | Journals & Publications | Patient Education

Clinical Practice Guideline > First and Second Stage Labor Management

First and Second Stage Labor Management

Clinical Practice Guideline | Number 8 | January 2024

In 2022, 32.2% of all births in the U.S. were by cesarean delivery

There are concerns that cesarean delivery is overused

Labor Arrest is the most common indication for cesarean delivery in the U.S.

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Zhang 2010 Study on Labor Curves
Retrospective
Study included 62,415 laboring pt's

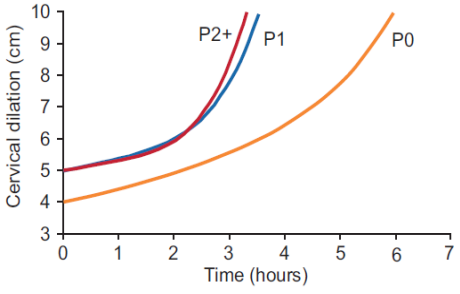

Fig. 2. Average labor curves by parity in singleton term pregnancies with spontaneous onset of labor, vaginal delivery, and normal neonatal outcomes. P0, nulliparous women; P1, women of parity 1; P2+, women of parity 2 or higher.

Zhang. Contemporary Labor Patterns. Obstet Gynecol 2010.

Harper 2012 Study on Labor Curves
Retrospective
Study included 5,388 laboring pt's

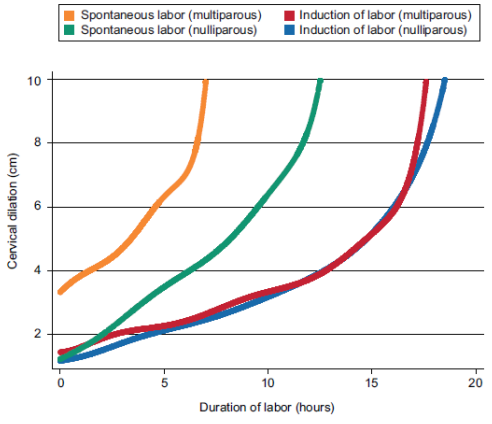

Fig. 1. Average labor curves stratified by parity and type of labor onset.

Harper. Normal Labor in Induction. Obstet Gynecol 2012.

54

Harper et al (2012) in a retrospective cohort study reported:

Latent phase of labor (defined as less than 6 cm) is significantly longer in induced labor compared to spontaneous labor

Active phase of labor (greater than 6 cm) is similar between groups

Induced women can spend over 17 hrs (95th percentile) in labor after 4cm while still reaching 10cm dilation.

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What is protracted labor?

Rate of change above 95th percentile

- **<0.7cm/hr in Nulliparous**
- **<1.3cm/hr in Multiparous**

Labor arrest should not be diagnosed before 6cm

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Active Phase Arrest is reserved for women at or beyond 6cm with ROM

And one of the following

- Failure to progress after 4 hrs of adequate uterine contractions

OR

- At least 6 hrs with inadequate u/c & absence of cervical change, despite Pitocin augmentation and titration

ACOG Clinical Practice Guideline, No.8, Jan, 2024, First and Second Stage Labor Management

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Second Stage

A specific absolute maximum length of time spent in second stage beyond which all women should undergo operative delivery has not been identified

Before diagnosing arrest of labor in the second stage, if maternal and fetal conditions permit, allow for the following:

- At least 2 hrs of pushing in multips
- At least 3 hrs of pushing in nullips

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Section II

Preparation for Cervical Ripening, Induction, or Augmentation

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- **Topics to be covered:**
  - **Indications for induction**
  - **Risk-benefit analysis**
  - **Informed consent**
  - **Nursing assessment/requirements prior to initiation**

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Indications for Cervical Ripening and Induction of Labor

- *"Indications for induction of labor are not absolute: the health care provider should consider maternal and fetal conditions, gestational age, status of cervix and other factors"*
- *"Labor may be induced for nonmedical or elective reasons. In such circumstances, the patient should be at least 39 weeks gestation."*

AWHONN Practice Monograph: Cervical Ripening and Labor Induction and Augmentation (2025)

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Contraindications to Induction

" Generally, the contraindications for labor induction are the same as those for spontaneous labor".

AWHONN Practice Monograph: Cervical Ripening and Labor Induction and Augmentation (2025)

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Risks of Induction

- Increased risk of infection to woman and baby
- Prolapsed or compressed umbilical cord
- Tachysystole
- Longer labor if the cervix is not ripe
- Uterine rupture
- Placental abruption
- Some association with neonatal jaundice
- Iatrogenic prematurity

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Risk-Benefit Analysis

- Provider performs this step
  - Considers gestational age of fetus
  - Potential risks to mother and fetus
  - Does the benefit outweigh the risk?

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Informed Consent

- Provider is responsible and should counsel patient regarding
  - Indication for induction
  - Agents and methods of labor stimulation
  - Possible need for repeat induction or cesarean delivery

AWHONN Perinatal Nursing (2021) pgs. 368-370

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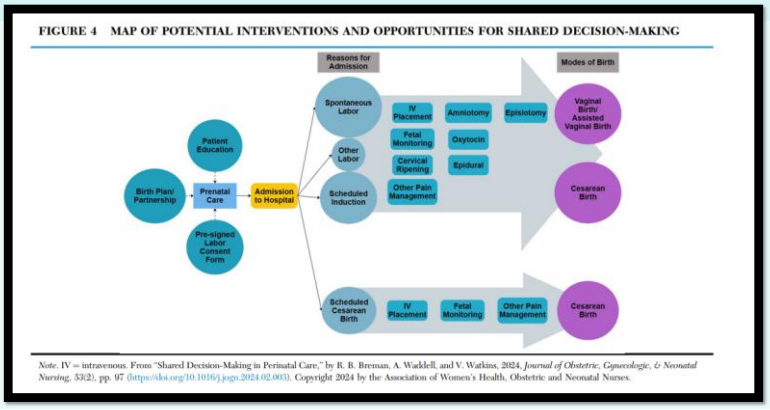
Map of Potential Interventions and Opportunities for Share Decision-Making



AWHONN Practice Monograph: Cervical Ripening and Labor Induction and Augmentation (2025)

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Informed Consent: Nurse's Role

- If a woman indicates that she is not informed as to why she is being induced or what the benefits/risks of induction are
  - Notify provider to speak to the woman via telephone or in person

Simpson (2020, p.s10)

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What Women Need To Know

- Elective induction of labor will likely take significantly longer than spontaneous labor
- Induction of labor will likely involve:
  - IV
  - Bedrest
  - Continuous EFM
  - Amniotomy
  - Significant discomfort
  - Use of epidural analgesia (frequently occurs)

AWHONN, 2020, p. s12

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Nurses Role

Assessments/Requirements Prior to Initiation

Establish maternal well-being	**Establish fetal well-being** • Baseline fetal monitoring • If fetal well-being is absent • Necessitates evaluation by a provider and documentation of plan	**Pelvic assessment**
Fetal presentation (U/S)	**Fetal size** • Estimated fetal weight	**Cervical status should be assessed and documented in medical record** • Bishop score • Presence or absence of uterine activity

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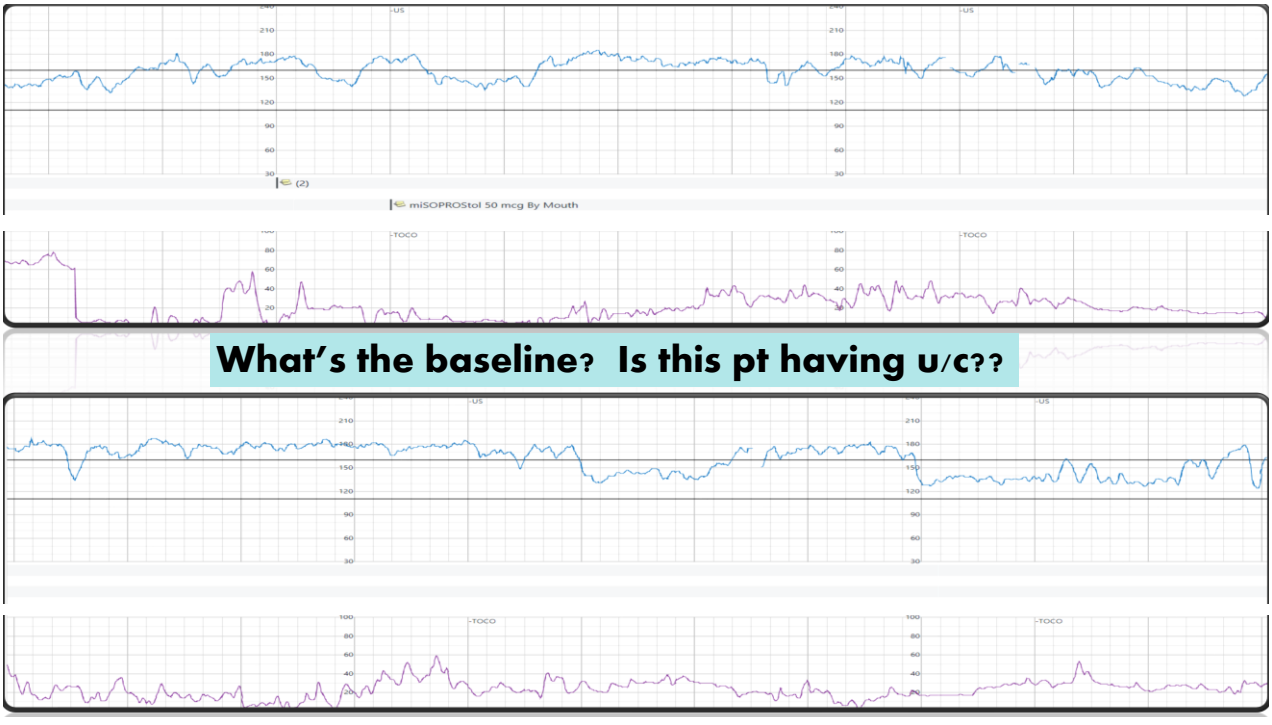

What's the baseline? Is this pt having u/c??

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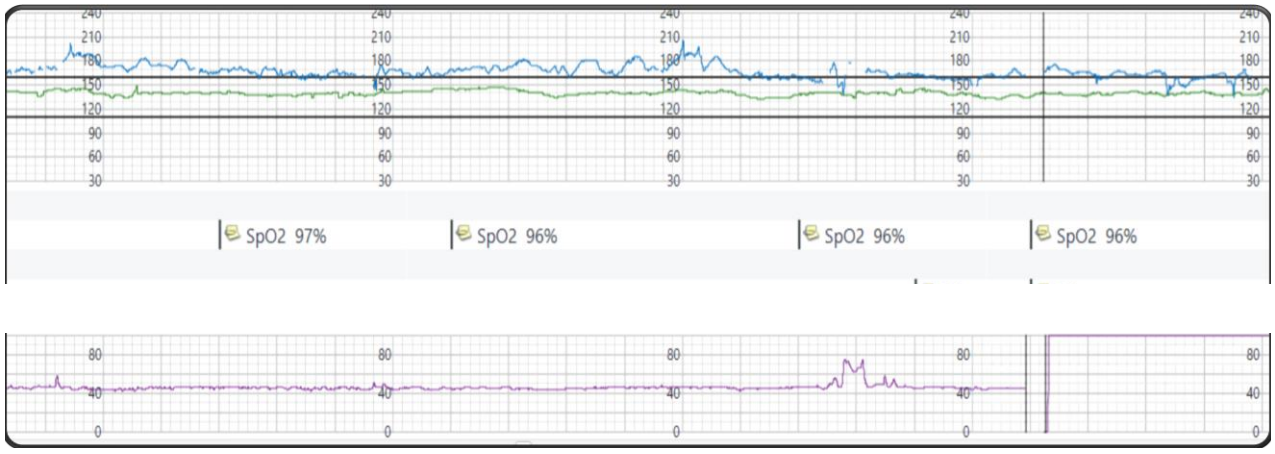
You put your pt on the monitor. Now what??



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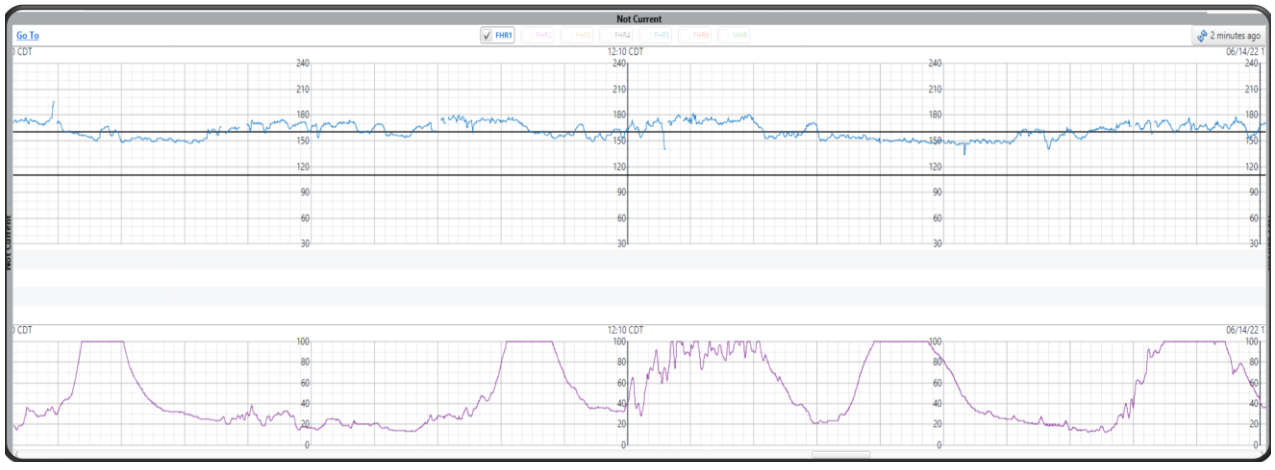
G_2P_1, here for non medical IOL, 39.5 wks



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Estimated Fetal Weights

- Individual departments may
  - determine and define how and by whom EFW's will be determined
  - Define how documentation of EFW will occur
    - Ex: in grams or pounds and/or use of terminology such as SGA/AGA/LGA

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Section III

Cervical Ripening

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Topics to be covered

- Review the pharmacological properties of prostaglandins
- Compare/contrast methods used for cervical ripening
- Explain the procedures for administration of prostaglandins
  - Vaginal Exams
- Describe nursing role assessments and interventions with cervical ripening/prostaglandins

75

What is Cervical Ripening??

Process of physical softening, thinning and dilating of the cervix. This process readies the cervix for labor

76

Common approaches for cervical ripening

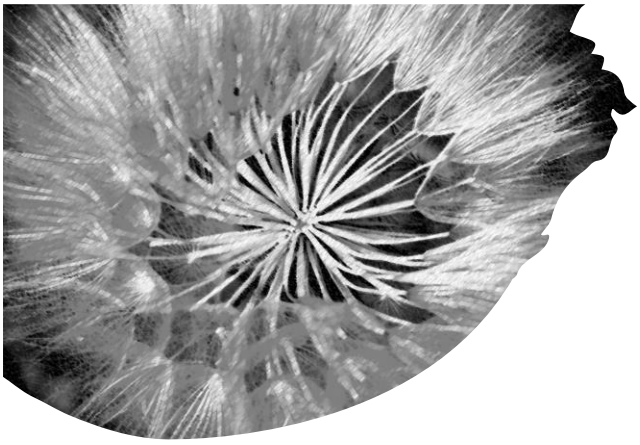
- Mechanical Methods
- Pharmacologic methods
- Combination approaches

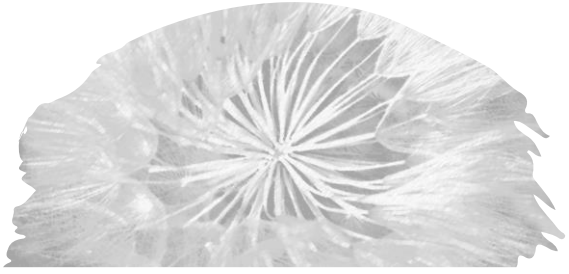
77

Indications for Prostaglandins

- Ripening an unfavorable cervix
- Has been used for induction
- IUFD
  - Will not be covered in this class

78





Bishop Score

Score of 6 or less

- **Unfavorable cervix**

Score over 8

- **Favorable cervix, Induction likely to be successful**
  - **Approaches success rate of spontaneous labor**

79

Bishop Score

ACOG (2009, p. 2) Induction of Labor Station reflects -3 to +3 scale

SCORE	DILATION	EFFACE	STATION	CONSIST	POSITION
0	CLOSED	0 - 30	-3	FIRM	POSTERIOR
1	1 - 2	40 - 50	-2	MEDIUM	MID
2	3 - 4	60 - 70	-1 - 0	SOFT	ANTERIOR
3	5-6	80	+1 - +2		

ACOG Practice Bulletin No. 107 2009, reaffirmed 2020

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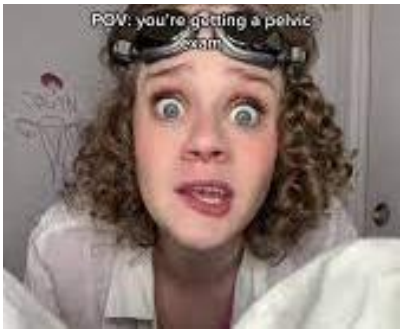
Vaginal Exams

REMEMBER RESPECTFUL MATERNAL CARE!

81



82

Some Things To Consider

- Ask permission first
- Establish a "Key Word" indicating when the person requests to have the exam pause and then a "Key Word" indicating when the person requests the exam stop
  - *Bundle Birth Podcast # 64 "They Did NOT Just Say That" aired June 24th, 2024*

83

Vaginal Exam Procedure

- Ensure privacy – door closed, curtain pulled, and patient draped using bedsheet
- Use a sterile glove and antiseptic or soluble gel for lubrication
  - Use the smallest glove possible to avoid friction of the extra latex from a larger glove
- Slowly position the patient to prevent hypotension- Supine position with head of the bed slightly elevated
  - Determine the following:
    - Effacement, Dilatation, Fetal Station, Presentation – head versus other presenting part, Position (Anterior/Posterior), and molding of the head
    - Status of the membranes. If membranes are ruptured – note color, amount and any odor of fluid

Lowdermilk (2024)

84

Vaginal Exam Procedure

- Explain findings of exam to patient and partner
- Document findings and report to provider

CONTRAINDICATIONS TO VAGINAL EXAMS

1. Vaginal Bleeding
2. Document Placental or Vasa Previa
3. Premature labor – with or without premature rupture of labor
4. Patient does not give consent

Lowdermilk (2024)
Bundle Birth Podcast # 64 "They Did NOT Just Say That!" aired June 24th, 2024

85

Things to Consider

- This is an area where nurses should develop proficiency through the assistance of a skilled preceptor
- Determining fetal station and position requires more skill than dilatation and effacement.
  - To accurately determine fetal station, the ischial spines must be identified.
    - See next slide

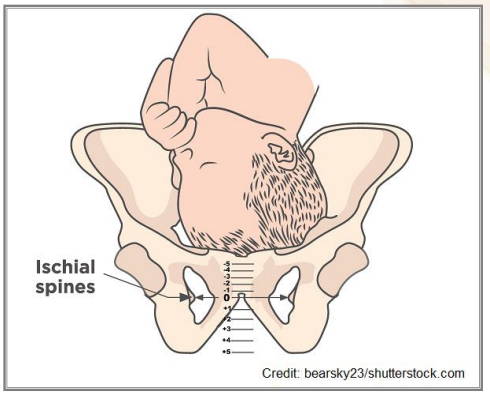
Simpson et. al (2021)

86

Vaginal Exam Procedure

Ischial Spines & Fetal Station

- **The Ischial Spines may be identified by pressing in the sidewall of the vaginal approximately 1 inch with examining fingers at 3 and 9 o'clock**
- **Not necessary to identify both spines**
- **Note the fetal skull and do not confuse with caput or molding**



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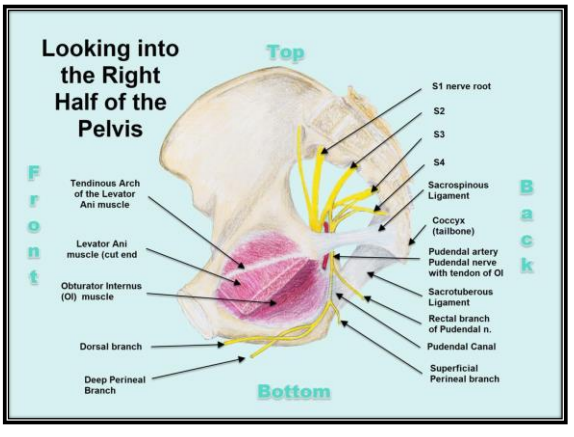
Simpson (2021)

87

However, be mindful of the Pudendal Nerve located near the Ischial Spines



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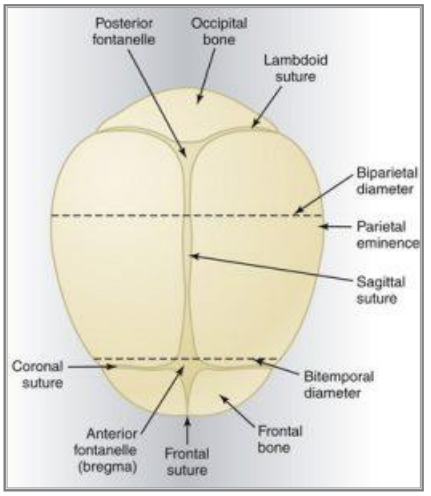
88

Fetal Position

More difficult to determine position than other components of the vaginal exam

Be familiar with the location of the fetal sutures versus the shape of the anterior or posterior fontanelle as these may be misshapen due to overriding suture or molding



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89

Challenges

- **When or frequency of exams?**
- **What if your exam is different than your colleague's or the provider's exam?**
- **How to address the provider when you are asked to perform an exam that you think may be unwarranted?**
- **How many vaginal exams are to many?**

90

Cervical Ripening Agents

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Mechanical and Other Methods of Ripening

- Membrane Stripping
- Amniotomy
- Transcervical Balloon Catheters
- Hygroscopic/Osmotic Dilators
  - Laminaria (seaweed)
  - Lamicel and Dilapan
- Nipple Stimulation
- Sexual Intercourse

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Mechanical Method Descriptions

Method	Description	Additional Information
Nipple Stimulation	• Lightly stroke one or both nipples for ten minutes followed by five minutes of rest; this pattern is repeated up to four times or until contractions are less than 3 minutes apart. • May be performed by using a breast pump • Important to monitor fetus; may produce excessive contractions • Increases oxytocin production	• Used for centuries to start or augment labor • Frequently used by midwives & other low intervention caregivers • Lack of standardized protocols • More research is needed
Sexual Intercourse	• Semen contains prostaglandins, which ripen the cervix • Clitoral stimulation & orgasm increase oxytocin release	• Though contractions often result, studies on labor onset are inconclusive

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Mechanical Method Descriptions

Method	Description	Additional Information
Membrane Sweeping	• Separations of chorionic membrane from the wall of the cervix • Performed by digital exam by rotating finger inside the cervix all the way around the cervix • Releases prostaglanding • Usually performed in the office at • ≥ 39 wks • May be uncomfortable for the women • May experience some vaginal bleeding or irregular u/c in the 1st 24 hours	• No ↑ risk of maternal/neonatal infection • Routine use not recommended as there is no evidence of improved maternal/neonatal outcomes • Not enough data to guide clinical practice regarding the use of stripping in a women who is GBS pos • Recommend woman to notify providers or come to hospital if: • ROM, bleeding, ↓FM, fever, regular u/c, or discomfort that persists between u/c

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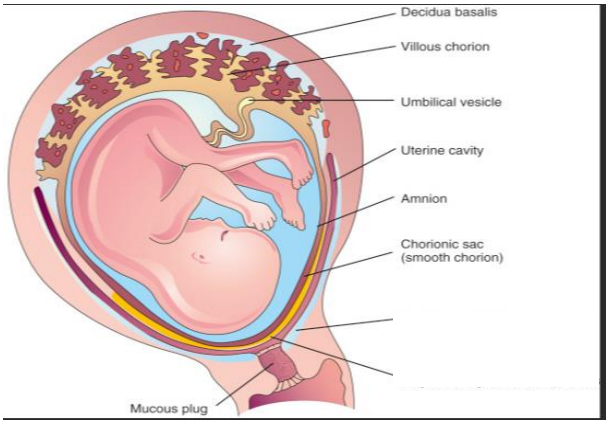
Membrane Sweeping



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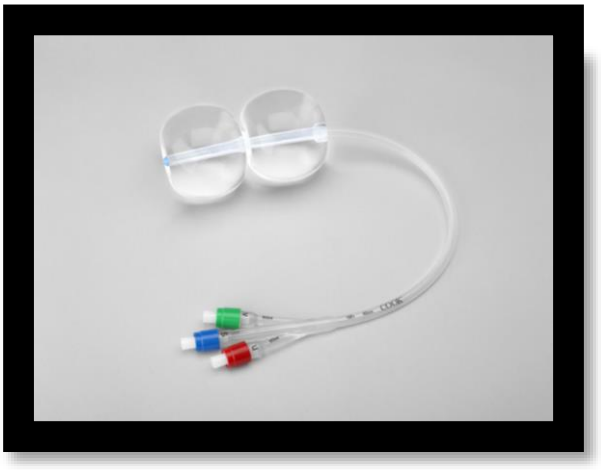
Method	Description	Additional Information
Amniotomy 	• Can be used for augmentation/induction of labor • May result in more variable decelerations • Early amniotomy is contraindicated when maternal infection is present: ex HIV, Hepatitis or active Herpes • Insufficient data to guide timing in patients who are receiving intrapartum GBS prophylaxis	• Risks of amniotomy: Umbilical cord prolapse, infection, fetal injury or bleeding from undiagnosed vasa previa • Explain procedure to patient • Help position patient • Assess FHR just before and immediately after • Watch for prolapse cord • Assess and document the amniotic fluid: amount, color, odor or presence of blood or meconium • Keep underpads dry and provide perineal care • Maintain bedrest until presenting part is firmly against the cervix

96

Method	Description	Additional Information
Transcervical balloon catheter	• 14-26 g Foley cath balloon • A double-balloon device has also been used • Inflated above the internal cervical os with 30-80 ml sterile water • Weight of the inflated balloon puts pressure on the lower uterine segment and cervix • Releases local prostaglandins • Results usually seen in 8-12 hours • Balloon falls out when dilation occurs	• ↓ tachysystole & FHR changes compared to prostaglandins • Outpatient use is being researched… • Foley & Simultaneous use resulted in a significantly shorter interval to delivery (15.92 vs 18.87 hrs) • Use for VBAC: • Studies show mixed results • Lack of compelling evidence to show an ↑ risk • May be an option for TOLAC with an unfavorable cervix

97

Demonstration on inserting Ripening balloon catheter



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Method	Description	Additional Information
Hydroscopic/Osmotic Dilators	• Natural: Laminaria (seaweed) • Synthetics: Dilapan/Lamicel • Release endogenous prostaglandins from fetal membranes and maternal decidua • Also results in mechanical dilation • Absorbs fluid from cervical tissue • May need to insert a few applicators • Placed until the cervix is full	• Rods (Dilapan-S) typically left in place up to 12 hours (24 hr max) • Dilators & sponges are then removed • Remove dilators if: • Spontaneous onset of labor • Category III FHR tracing • SROM • Spontaneous expulsion of dilators • More studies needed to compare with other options

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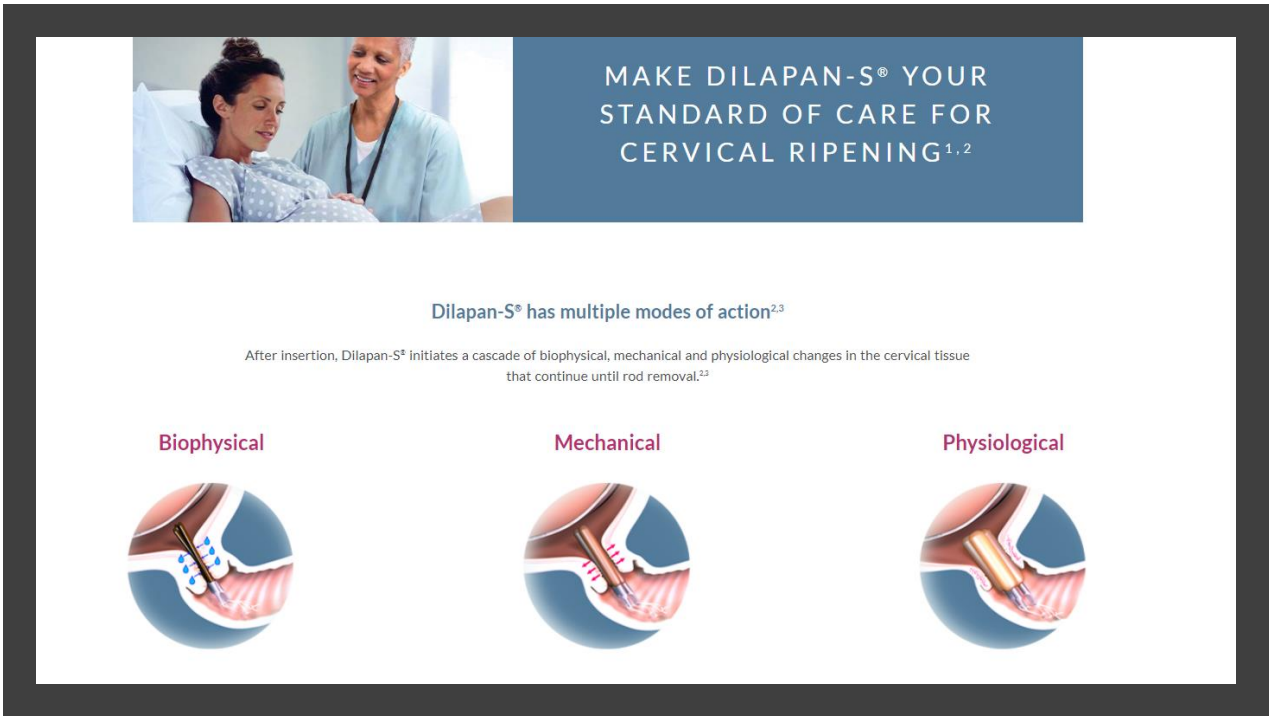

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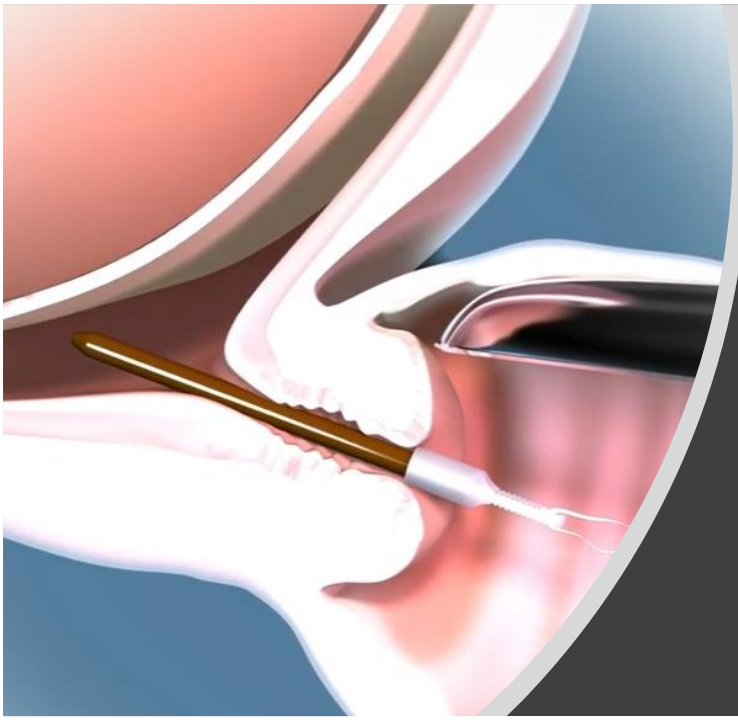


Dilapan-S

https://www.dilapans.com/healthcare-professionals/using-dilapan-s/#using-watch

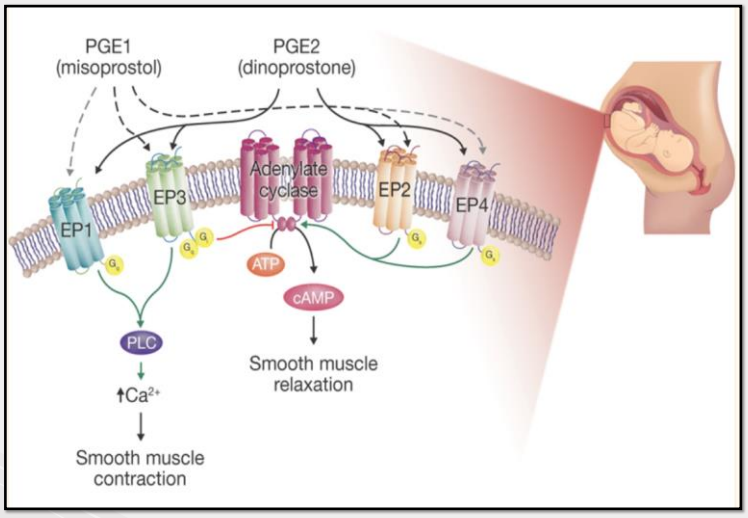
101

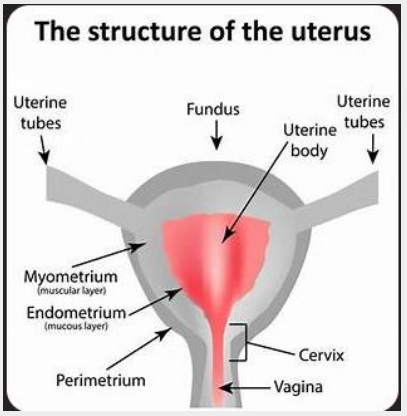
Prostaglandin Cervical Ripening Agents

- **PGE_1 (misoprostol) Cytotec**

- **PGE_2 (Dinoprostone) Cervidil (insert) FDA approved**

102





Dinoprostone is chemically identical to PGE_2 & targets all 4 EP receptor sites

Misoprostol has relative selectivity for EP_3 but also binds to EP_2 resulting in increased uterine contractility

103

How Do Prostaglandins Work?

Soften the cervix and relax cervical smooth muscle

May also produce uterine contractions

- **Increase Inflammatory mediators in the cervix**
- **Remodel the cervical extracellular matrix through a decrease in collagen and cervical glycosaminoglycans**

Chiossi et al (2012)

105

Cervidil

- 10 mg controlled release vaginal insert
- Remove after 12 hours or at onset of labor
- Remove if tachysystole
- Remove with FHR changes
- Continuous fetal & u/c monitoring while in place
- Contractions usually occur within 5-7 hrs

106

Cervidil

- Most expensive option
  Approx $215-250
- Keep frozen until immediately before use
- May use a minimal amount of water soluble lubricant for insertion
- Pt should remain recumbent or lateral for 2 hours after insertion
- Side effects:
  Fever, chills, vomiting & diarrhea

107

Use of Pitocin after Cervidil

- Should be delayed for 30-60 minutes after removal of insert
- PGE_2 exposure can potentiate contractile response to Pitocin

108

Misoprostol

Routes of Administration

- Intravaginal
- Oral
- Sublingual
- Buccal

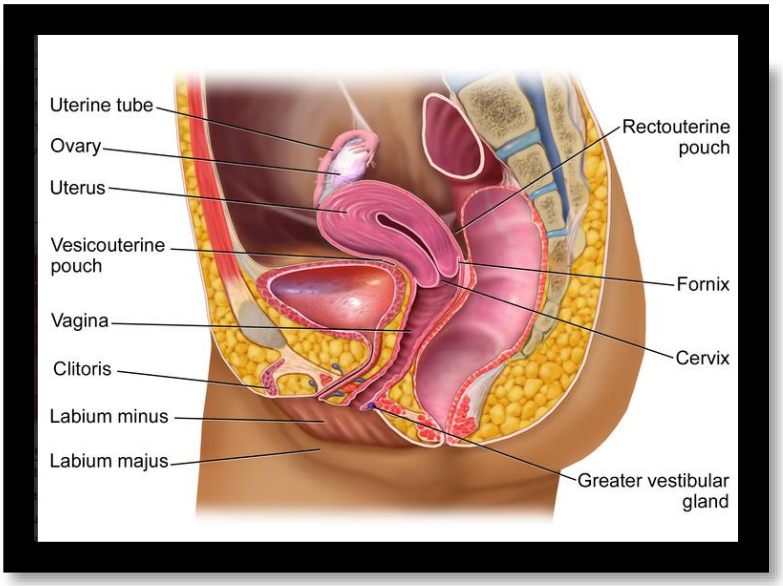
109

Misoprostol Dosing & Administration

25mcg intravaginal is recommended 1st dose	May repeat every 3-6 hours	Every 4-6 hour dosing has been assoc w/ less tachysystole
If using 50mcg	Every 6 hour dosing is recommended by ACOG	Associated with more tachysystole

110

Placement is in the Posterior Fornix



111

Misoprostol

Do you think the onset is faster with an oral dose or vaginal dose

112

Misoprostol facts

	Onset	Peak	Duration
Oral	8 minutes	30 min	2 hours
Sublingual	11 minutes	30 min	3 hours
Vaginally	20 minutes	2 hours	4 hours
Rectally	100 minutes	2 hours	4 hours

Sublingual produces a higher peak concentration vs oral because it avoids the 1st pass metabolism via the liver

After ingestion misoprostol undergoes a series of chemical reactions that makes it very similar to Hemabate

113

Misoprostol

100mcg
200 mcg tablets

Tablet is broken to provide 25-50mcg doses

Advantages:
Low cost (approx $2), ease of insertion quick action

Disadvantages:
Cannot be removed once inserted

115

Misoprostol Redosing Considerations

Delay if pt having low amplitude high frequency u/c

Delay if pt having 2 or more painful u/c in ten minutes

Do not give if Cervix is now favorable

Do not give if pt enters active labor

Do not give if FHR is indeterminate or abnormal

116

Additional Considerations when starting Pitocin after Misoprostol administration

If dose was intravaginal:
Should be delayed for at least 4 hrs after last dose

If dose was oral:
Should be delayed for at least 2 hrs after last dose

Previous misoprostol exposure can potentiate contractile response to Pitocin

117

What is the main Complications with Misoprostol & Cervidil??

Tachysystole

- Terbutaline 0.25mg subq given to correct FHR pattern or tachysystole

Side effects

- Fever, Chills, Vomiting & Diarrhea

118

Misoprostol & Cervidil with Tolac

•Contraindication

- **Misoprostol & Cervidil should not be used for cervical ripening or labor induction in patients at term who have had a cesarean delivery or major uterine surgery.**

ACOG Practice Bulletin No. 107 2009, reaffirmed 2020

119

Prostaglandin Ripening: Nursing Care*

Monitor for Maternal/Fetal response

- Fetal Heart Rate
- Maternal comfort/discomfort

Monitor for Contraction Activity

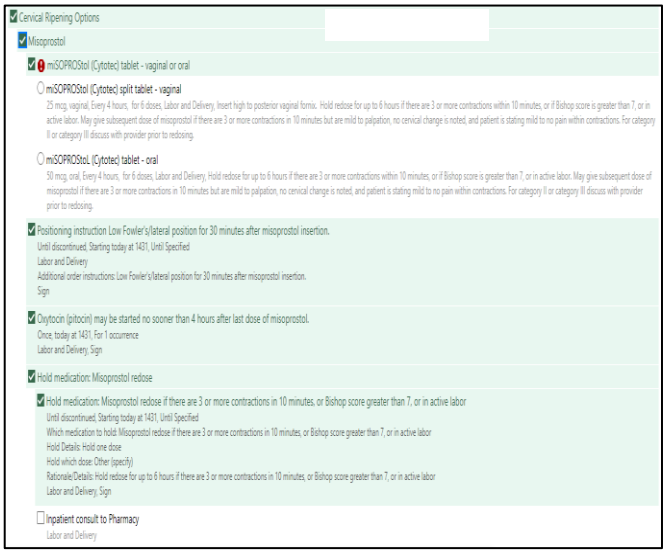
- Main side effect is tachysystole with or without fetal heart rate changes

Monitor for Labor Progress

120

Be familiar with your facilities order set/ protocol

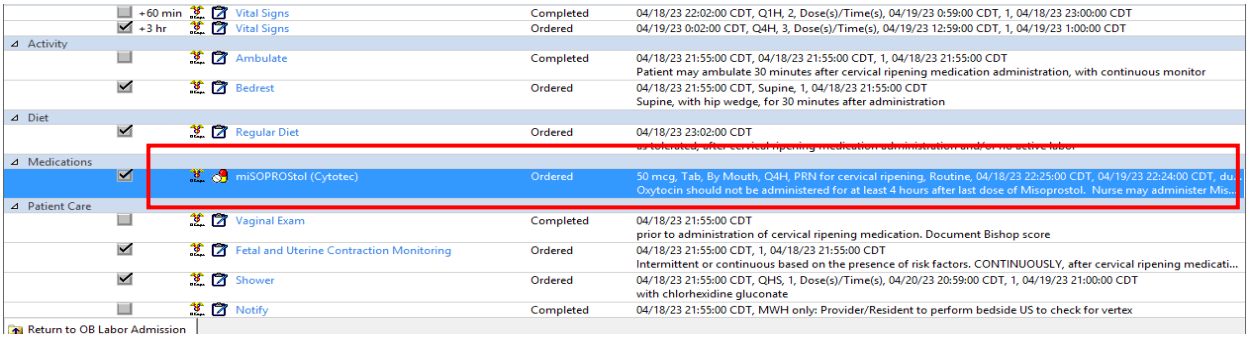
Example of Standing Order Set @ Bryan



121

Know your cervical ripening order sets?

Oxytocin should not be administered for at least 4 hours after last dose of misoprostol	Nurse may administer if FHR monitoring Category I	Fewer than 5 contractions in 30 minutes	Bishop score < 8



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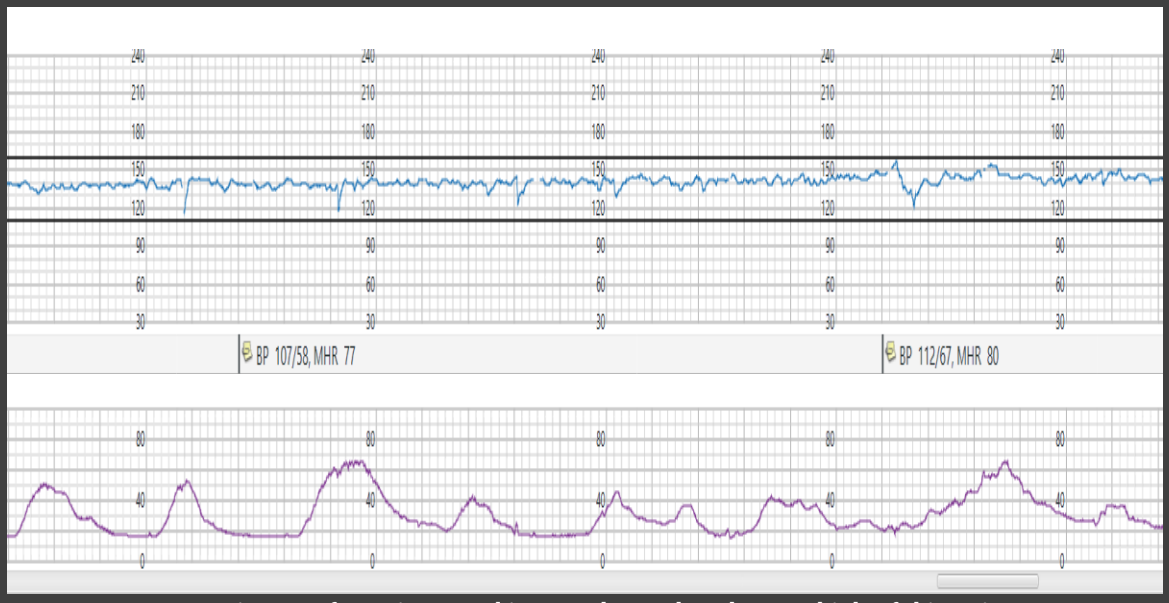


45 minutes after misoprotol ingested... What do you think of this strip?
Would you initiate any interventions at this time?

123

#2

Interventions for Uterine Tachysystole and/or Fetal Heart Rate Concerns Related to Prostaglandins

- Reposition
- Assess hydration status and consider IV fluid bolus
- Consider Terbutaline (0.25mg SQ) based on fetal response
- If cervidil is in place, remove it
- Notify provider based upon maternal/fetal response

124

Contraction Activity

Is it as simple as counting the humps?

125

Uterine Contraction Assessments

Contraction Assessment	Definition
Frequency	Time from the beginning of one contraction to beginning of next; documented in minutes
Duration	Time from the beginning of the contraction to the end of contraction; documented in seconds
Intensity	The strength of the contraction
Resting tone	Intrauterine pressure between contractions
Relaxation time	The amount of relaxation time between the end of one contraction and the beginning of the next contraction

126

AWHONN Standards for Professional Registered Nurse Staffing for Perinatal Units

- **Women receiving pharmacologic agents for cervical ripening such as Cervidil or Cytotec require continuous electronic fetal monitoring and a minimum of 1 nurse to 2 women with assessment of maternal-fetal status at lease every 30 minutes.**

AWHONN (2022, p.24); Simpson (2020, p.s8)

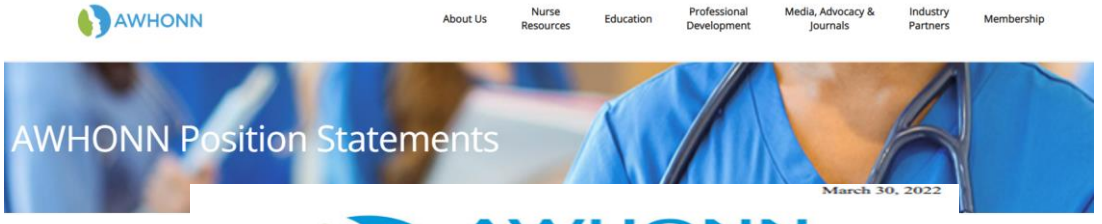
127

Oxygen for Intrauterine Resuscitation????

128

"supplementation is commonly used for intrauterine resuscitation in cases of indeterminate or abnormal fetal heart rate patterns despite inadequate data to support its use. However, an increasing body of evidence now demonstrates no benefit of intrapartum oxygen supplementation"

129



March 30, 2022

AWHONN
PROMOTING THE HEALTH OF WOMEN AND NEWBORNS

Association of Women's Health, Obstetric, and Neonatal Nurses

AWHONN Response to ACOG's Practice Advisory on Oxygen Supplementation in the Setting of Category II or III Fetal Heart Rate Tracings

In January 2022, the American College of Obstetricians and Gynecologists (ACOG, 2022) issued a practice advisory about supplemental oxygen for patients in labor with an indeterminate (Category II) or abnormal (Category III) fetal heart rate tracing (FHR). Citing two publications, a systematic review of 16 randomized controlled trials (RCTs) (Raghuraman et al., 2021) and a report of a secondary data analysis from an RCT from a single institution (Raghuraman et al., 2020), the Committee on Clinical Practice Guidelines-Obstetrics at ACOG concluded that routine use of oxygen supplementation in individuals with normal oxygen saturation is not recommended for fetal intrauterine resuscitation.

Nurse scientists and clinicians at the Association of Women's Health, Obstetric, and Neonatal Nurses (AWHONN) reviewed the ACOG (2022) practice advisory and the cited publications. As part of the AWHONN Fetal Heart Monitoring program, available evidence is frequently evaluated and continually updated as needed. The most recent course materials and textbook have been published (Lyndon & Wisner, 2021). This is a very important clinical issue for nurses because nurses provide the vast majority of direct hands-on care to laboring women in the United States (National Academies of Sciences, Engineering, and Medicine, 2020) and are thus the clinicians most likely to be closely assessing the FHR tracing and determining the type and duration of common intrauterine resuscitation measures.

We present a summary of what is known on this topic and recommendations for consideration of administration of oxygen in selected women in labor with an indeterminate (Category II) or abnormal (Category III) FHR tracing.

130

Labor Induction versus Expectant Management in Low-Risk Women

August 9, 2018
DOI: 10.1056/NEJMdo005318

https://www.nejm.org/do/10.1056/NEJMdo005318/full/

132

ARRIVE Trial

- **Multicenter unmasked trial**
- **Randomly assigned low-risk nulliparous women who were at 38 weeks 0 days to 38 weeks 6 days of gestation to either**
  - **Age of participants – median age – 24 in the induction group. Total age range 23-28**
  - **BMI - median BMI 30.5 in the induction group.**
  - **Bishop Score – median was 4**
- **Labor induction at 39 0/7 weeks to 39 4/7 weeks, or to**
- **Expectant management**
  - **Women were asked to fore go elective delivery before 40 weeks 5 days and to have delivery initiated no later than 42 2/7 weeks**

133

Arrive Trial Conclusions

- **Compared to expectant management, induction of labor at 39 weeks in low-risk nulliparous women**
  - **Did NOT result in a significantly lower frequency of composite adverse perinatal outcomes**
  - **It DID result in a significantly lower frequency of cesarean delivery**

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Society for Maternal Fetal Medicine SMFM: ARRIVE Trial

Summary of Recommendations

	Recommendations
1	It is reasonable to offer elective induction of labor to low-risk nulliparous women ≥39 weeks 0 days of gestation. We recommend that providers who choose this approach ensure that women meet eligibility criteria of the ARRIVE trial.
2	We recommend against offering elective induction of labor to women under circumstances that are inconsistent with the ARRIVE study protocol unless performed as part of research or quality improvement.
3	We recommend that further research be conducted to measure the impact of this practice in settings other than a clinical trial.

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CMQCC Response to Arrive Trial

Comments:

(1) The patient population in this study was both very low risk (mean age =24yrs, and all women with any medical complications were excluded) and quite interested in labor induction (fully 75% of eligible patients refused entry into the trial). Nonetheless, a cesarean rate of 18.6% following labor induction in nullips is quite an accomplishment.

(2) Most hospitals do not come anywhere near this rate. The rate of cesarean after labor induction in low-risk nullips among the 240 California hospitals averages 32% with rates as high as 60%.

(3) All hospitals in the Arrive trial used a common definition of failed induction (a cesarean for any reason following labor induction): **Cesarean delivery should not be undertaken during the latent phase prior to at least 15 hours after rupture of membranes have occurred with concurrent oxytocin administration.**[2] After that point, the decision to continue labor in latent phase was individualized. Once in Active Phase (6 centimeters dilation), ACOG/SMFM guidelines were followed for the diagnosis of labor arrest and descent disorders.

Bottom Line:

(1) There are currently no changes to the SMFM/ACOG guidelines for induction of labor. Specifically, induction of labor at less than 41 weeks 0 days with an unfavorable cervix should only be performed for medical indications.

(2) It needs to be repeated 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 (see above) and for management of active phase and fetal monitoring abnormalities need to be adopted simultaneously.**

(3) If labor guidelines and induction failure definitions are not adopted, the cesarean rates will likely rise significantly.

(4) Induction of labor with an unfavorable cervix takes a very long time to do following guidelines and will impact room availability and nursing hours.

[1] Grobman WA, etal. A randomized trial of elective induction of labor at 39 weeks compared with expectant management of low-risk nulliparous women. Am J Obstet Gynecol 2018; 218:S601.
[2] Grobman WA, etal. Defining failed induction of labor. Am J Obstet Gynecol. 2018; 218:122.e1-8

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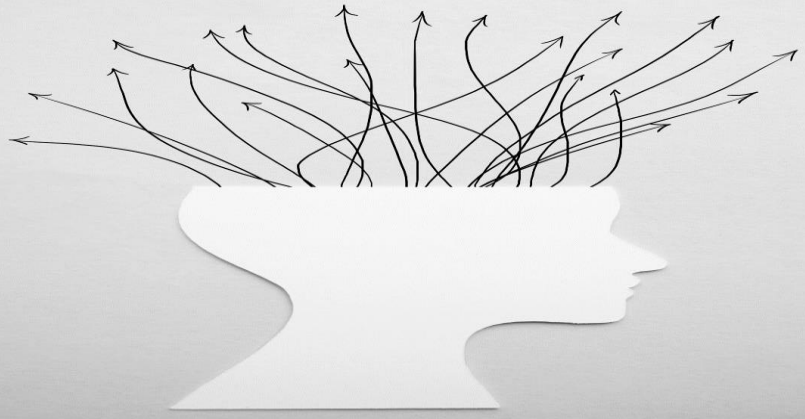
Group Activity



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Case Study

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Section IV

Pitocin and Oxytocin

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Topics to be covered

- Role of the Nurse
- Assessment & Documentation
- Definitions of Labor Induction vs Augmentation
- Uses of Pitocin
- Physiology/pharmacology
- Dosage and rate increase intervals
  - High-dose versus lose-dose
- Administration guidelines
- Nurses' responsibilities

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Role of the Nurse

- To provide care to women undergoing an induction of labor
- To be familiar with professional standards/guidelines
- To be familiar with hospital policies/procedures
- To be knowledgeable about induction agents to include: indications, administration, assessment and monitoring, and side effects
- To document care provided
- To communicate with provider and team

142

Role of the Nurse (cont)

- Have an MD order prior to initiating Pitocin
- Inquiring if the pt has received informed consent from the provider
- Verify that elective inductions are at least 39 wks
- Verify that medical indication is documented
- Perform vaginal exam to assess cervical status & fetal presentation prior to initiating Pitocin
- Establish presence of Maternal/Fetal well-being

143

Let's look at Assessment & Documenation

Are they the same?

They are 2 separate tasks

144

Assessment

Systematic way to collect & analyze data

Documentation

The tool used to record this information

145

*Determine if patient is:

High Risk

Low Risk

146

What risk factors make a pt high risk??

Meconium stained fluid

Bleeding

Pitocin administration

Any abnormal fetal tests before birth or ↑risk of fetus developing acidemia

Maternal conditions that may affect fetal well being

147

*Determine what phase of labor she is in

148

AWHONN POSITION STATEMENT

AWHONN
PROMOTING THE HEALTH OF WOMEN AND NEWBORNS

Fetal Heart Monitoring

TABLE 2 ASSESSMENT OF FETAL STATUS USING ELECTRONIC FETAL MONITORING [a,b]

	First Stage of Labor		Second Stage of Labor	
	Onset of labor to 4 cm dilation	4 cm to 10 cm (Complete dilation)	Complete dilation (Passive fetal descent)	Complete dilation (Active pushing)
Low risk without oxytocin	Insufficient evidence to make a recommendation Frequency at the discretion of the midwife or physician	Every 15-30 minutes	Every 15-30 minutes	Every 15 minutes
With oxytocin or risk factors	Every 15 minutes with oxytocin; every 30 minutes without oxytocin	Every 15 minutes	Every 15 minutes	Every 5 minutes

[a]Frequency of assessment should always be determined based on the status of the woman and fetus and at times will need to occur more often based on their clinical needs, e.g., in response to a temporary or on-going change.
[b]Summary documentation is acceptable, and individual hospital policy should be followed.

149

Where should you perform your assessment & documentation

At the bedside

150

Summary Documentation

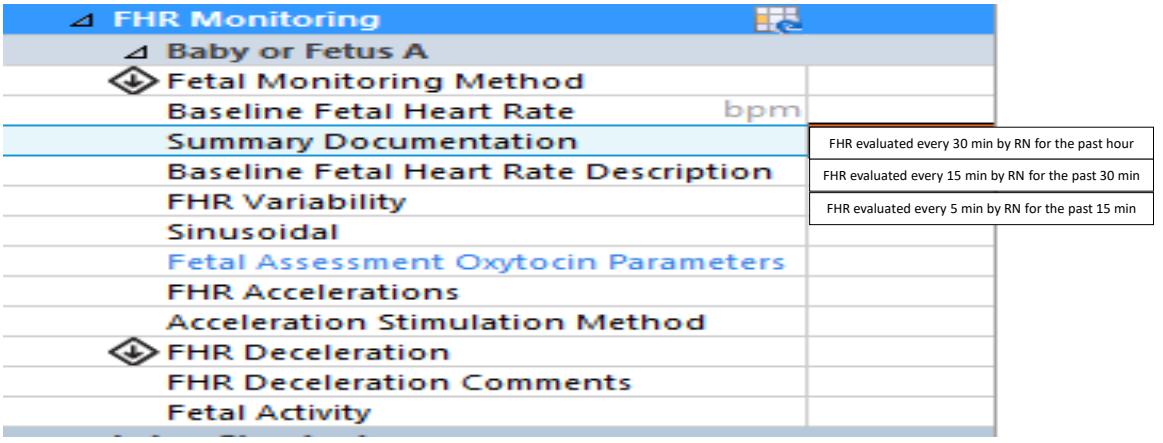
When EFM is used to record FHR data permanently periodic documentation can be used to summarize fetal status

Your assessment involves you continuously looking at your EFM and Maternal status then documenting it

Summarization is the actual documentation of what is entered into the computer system (example: you are assessing every 15 minutes but documenting in the record every 30 minutes)

151

Summary Documentation



152

Uses of Pitocin

- **Induction**
- **Augmentation**
- **Postpartum hemorrhage prevention/treatment**

153

Induction	**Use of pharmacologic and/or mechanical methods to initiate labor**
Augmentation	**Use of pharmacologic methods or artificial rupture of membranes to increase frequency and/or strength of contractions following the onset of spontaneous labor or spontaneous rupture of membranes**

ACOG, 2014, Simpson, 2020

154

Pitocin a High Alert Medication

What does this mean?

155

What safety measures do we take when administering Pitocin??

156

Pharmacology

Endogenous

- Oxytocin which is produced naturally by the body

Exogenous

- Pitocin which is synthetic

157

Endogenous Oxytocin

A peptide consisting of amino acids

Produced in the hypothalamus

Transported to the posterior pituitary

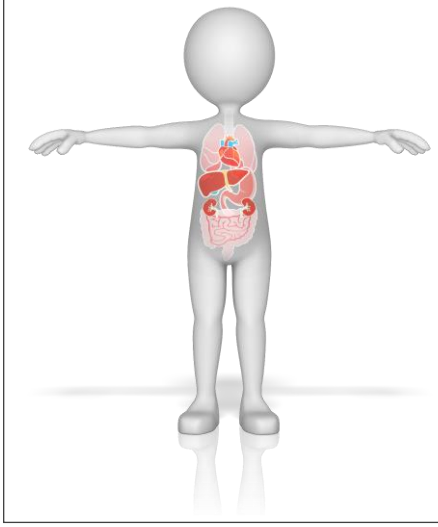
Released into maternal circulation in response to

- breast stimulation
- sensory stimulation of the lower genital tract
- cervical stretching

Oxytocin that is released in response to vaginal and cervical stretching

- results in uterine contractions

158

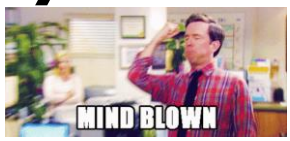


Endogenous Oxytocin

- Plasma clearance of oxytocin is through the maternal kidneys and liver by the enzyme oxytocinase

159

How much oxytocin do you think is produced w/ spontaneous labor?



During the 1st stage of spontaneous labor, maternal circulating concentrations are approximately that which would be achieved with a continuous infusion of exogenous oxytocin at 2 to 4 mu/min

During labor, fetus excretes approximately

- 3 mu/minute

Simpson (2020, p. 522)

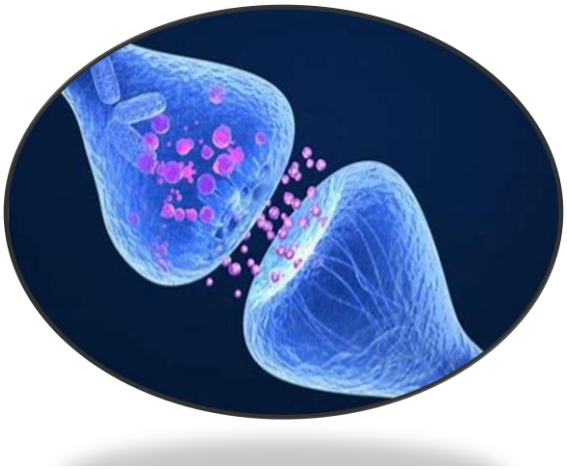
160

Exogenous Oxytocin

- Known commonly as Pitocin
- Synthetically made
- Chemically and physiologically identical to endogenous oxytocin

161

Pitocin Physiology Pharmacology



Pitocin acts via membrane bound receptors in the uterus to stimulate uterine contractions

Pitocin acts to increase myometrial contraction through increasing the availability of intracellular calcium

162

Physiology/Pharmacology of Pitocin

Half life of Pitocin
- 10 to 15 minutes

Steady state (drug has achieved the full effect)
- 3 to 4 half-lives

Uterine response to IV administration usually occurs within
- 3 to 5 minutes

Simpson (2020, p. S22)

163

Oxytocin Receptors

Keep in mind the gestational age:

Responsiveness to oxytocin begins at approximately 20 weeks gestation	Dramatically increases at approximately 30 weeks gestation	This is followed by a plateau from 34-36 weeks	Sensitivity increases again at term

(ACOG, 2009; Dudley, 1997)

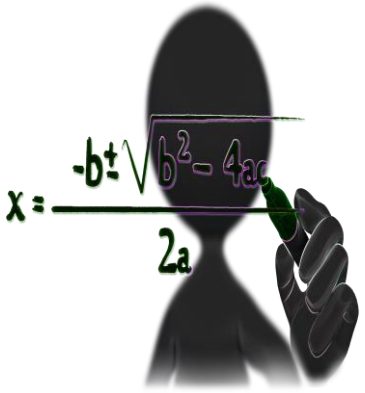
164

Variables that affect how effectively the smooth muscle of the uterus contracts

- oxygenation status of the uterine muscle
- availability of glucose for contraction activity
- number of oxytocin receptors in the uterus

165

Factors That Influence Response to Oxytocin



Maternal body surface area	**Cervical dilation, parity, gestational age**
Individual response to oxytocin	**None of these factors, alone or in combination, predict dosage of oxytocin required to achieve delivery**

ACOG Practice Bulletin No. 107 2009, reaffirmed 2020

166

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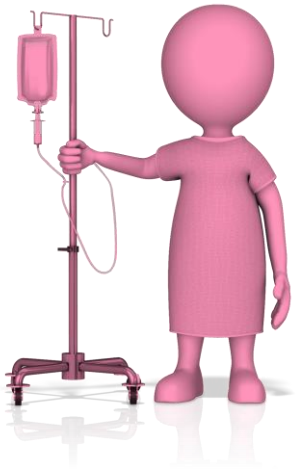
If the receptor sites are saturated by Pitocin being administered for induction/augemtation:

- Further ↑ will be unsuccessful in stimulating contractions
- Pitocin may need to be turned down or off in order to open up receptor sites

168



Pitocin

Dilution, Dosage and Rate Increase Intervals

169

Pitocin Dilution Variations

Various dilution protocols

- Use an isotonic solution
- 10, 20, or 30 U in 500 or 1000 ml
- 30 units of pitocin in 500 ml isotonic solution
  - = 1 ml/hr = 1 milliunit/min

Regardless of the dilution, document the rate in milliunits/minute

170

Pitocin Dosage and Interval Regimens

Two Approaches

- Low-dose physiologic approach
- High-dose pharmacologic approach

171

ACOG The American College of Obstetricians and Gynecologists

CLINICAL PRACTICE GUIDELINE

NUMBER 8

JANUARY 2024

(REPLACES OBSTETRIC CARE CONSENSUS 1, MARCH 2014)

First and Second Stage Labor Management

Regimen	Starting Dose (mU/min)	Incremental Increase (mU/min)	Dosage Interval (min)
Low-dose	0.5 – 2	1-2	15-40
High-dose	4 or higher	3-6	15-40

Pg. 154

172

Know your facilities protocol: OB Oxytocin Protocol

1. Titrate oxytocin according to maternal and fetal response, labor progress, and the "Oxytocin in Use" checklist. Components of the "Oxytocin In Use" Checklist include the following:
   - Fetal Assessment parameters
     - o At least one acceleration of 15 bpm x 15 seconds in 30 minutes or minimal to moderate variability for 10 of the previous 30 minutes.
     - o No more than one late deceleration occurred.
     - o No more than two variable decelerations exceeding 60 seconds in duration and decreasing greater than 60 bpm from the baseline within the previous 30 minutes.
     - o Absence of prolonged decelerations(s).
   - Uterine Contraction Assessment parameters
     - o No more than 5 uterine contractions in 10 minutes for any 30 minute interval.
     - o No more than one contraction lasting greater than 120 seconds duration.
     - o Uterus palpates soft between contractions.
     - o If IUPC is in place, MVU must calculate less than 300 mm Hg and the baseline resting tone must be less than 25 mm Hg.
2. If adequate progress of labor cannot be determined by external monitors, notify healthcare provider for specific order for internal pressure catheter.
3. If dilation is 5-6cm with adequate labor progress, oxytocin may be decreased in increments of 1 milliunit/minute.
4. If the oxytocin infusion has been discontinued for less than 30 minutes and when fetal and uterine assessment parameters have been met, per the "Oxytocin In Use" Checklist components, oxytocin may be restarted at not more than one-half of the rate at which it was discontinued and then increased by 1 milliunit/minute at a minimum of every 15 minutes.

173

OB Oxytocin Protocol (cont)

5. If the oxytocin infusion has been discontinued for more than 30 minutes, and when fetal & uterine assessment parameters have been met, per the "Oxytocin In Use" Checklist components, oxytocin may be restarted at 1 milliunit/minute and then increased by 1 milliunit/minute at a minimum of every 15 minutes.
6. Once oxytocin is at 20 milliunits/minute and contraction pattern fails to result in cervical effacement and dilation, a nurse should call the healthcare provider for specific orders for oxytocin.
7. When there is a Category II tracing, the following interventions may be considered: decrease or discontinue oxytocin, reposition patient, administer oxygen, assess hydration status, and consider IV bolus and notify the healthcare provider. If no resolution and uterine tachysystole is present or the need to reduce uterine contraction activity is present, the RN will consider Terbutaline administration per order in the Oxytocin Power Plan.
8. When there is a Category III tracing, the following interventions are recommended: discontinue oxytocin, reposition patient, administer oxygen, consider IV bolus, and notify the healthcare provider for prompt evaluation / delivery. If no resolution and if uterine tachysystole is present, the RN will consider Terbutaline administration per order in the Oxytocin Power Plan.

174

☑ oxytocin (PITOCIN) ANTEpartum 30 units in 500 mL NS infusion

0-20 milli-units/min, Intravenous, Continuous
INITIAL DOSE 1-2 milli-units/minute. The minimum dose to adequate contractions should be used; increasing the dosage by 1-2 milli-units/minute no more frequently than every 30 minutes. If contractions are inadequate with ordered dose, notify provider for additional orders.

Adequate contractions are defined as either: 1) Contractions every 2-3 minutes resulting in normal progressive cervical changes, or 2) a total of 200 mm/Hg Montevideo units using an IUP catheter. Dose may be decreased by 2 milli-units/minute every 30 minutes after desired frequency of contractions has been reached, labor has progressed to 5-6 cm dilation, and patient remains in active labor.

For UTERINE TACHYSYSTOLE (more than five contractions in 10 minutes averaged over 30 minutes) with reassuring FHR (moderate variability and absence of recurrent late/variable decelerations):
1) Intervene by performing at least one of the following interventions: a) reposition patient, b) IV fluid bolus from primary fluid bag until uterine tachysystole resolves or up to 500 mL (notify provider if more than 500 mL is required), c) decrease oxytocin by half;
2) Reassess patient 15 minutes after primary intervention(s); if tachysystole persists, perform additional intervention(s);
3) Reassess patient 15 minutes after secondary intervention(s); if tachysystole persists, discontinue oxytocin and notify provider

DISCONTINUE OXYTOCIN for:
1) Uterine tachysystole that does not resolve after intervention(s) (30 minutes from initial intervention);
2) Non-reassuring fetal heart rate pattern (recurrent variable decelerations; fetal tachycardia or bradycardia; minimal to absent baseline FHR variability; late decelerations).
NOTE: in addition to discontinuing Oxytocin,
1) reposition patient;
2) IV fluid bolus from primary fluid bag up to 500 mL;
3) Notify provider. If less than 30 minutes from time Oxytocin is turned off to resolution of tachysystole and FHR, resume Oxytocin at no more than half the previous rate. If 30 minutes or greater from time Oxytocin is turned off to resolution of tachysystole and FHR, resume Oxytocin at the initial dose per provider.

DISCONTINUE and DISCONNECT oxytocin:
1) At the time of decision to proceed to C-section

175

Rationale for Low-Dose*

Based on physiologic principles of oxytocin

Mimics the normal physiologic pattern of oxytocin release

- 4 to 6 mu/minute

Based upon pharmacologic half-life of 10-15 minutes and steady state of 40 minutes

176

Low-Dose Rationale

The full effect of the uterine response to an increase in oxytocin cannot be evaluated until the steady state has been achieved.

Increasing the infusion rate before steady state is achieved results in women receiving higher doses of oxytocin than necessary.

177

Low-Dose Advantages

- Fewer episodes of excessive uterine activity
- Fewer operative vaginal births
- Higher rate of spontaneous vaginal birth
- A trend toward lower cesarean birth

Simpson, 2020, p. S24

178

Rationale for High-Dose

Based upon a pharmacologic approach

Supporters believe higher doses are associated with

- shorter labors
- decreased incidence of chorioamnionitis
- decreased cesarean for dystocia

179

What do you think are disadvantages associated with High-Dose protocols?

More tachysystole and indeterminate or abnormal FHR patterns

180

Is there a maximum recommended dose of Pitocin?

- The numeric value for the maximum dose of oxytocin has not been established
- Wen, et al. (2001) reported that in active management of labor, once pitocin exceeds 48 mu/min the risk of cesarean is more than 3-fold

181

Maximum Dose

- If the hospital policy has a maximum dose listed, the nurse should follow the policy
- Do you know the maximum dose listed in your protocol?
  - What if the provider wants to go above the maximum dose?

182

How do we Titrate Dosage??

Labor progress
- use the least amount needed to affect cervical change
- Includes looking at Uterine contractions

Maternal response

Fetal response

183

Let's play a game ☺

- Go to Menti.com
- Code: 4658 4348

184

Titration

If using external monitoring

- Palpable contractions of normal duration every 2 ½ to 3 minutes

If labor progress is not occurring with intact membranes, consider amniotomy (if not contraindicated) and consider placement of IUPC to more accurately assess uterine activity

If using internal monitoring

- Titrate to establish uterine activity patterns reaching a minimum of 200 Montevideo units (MVU's)

Miller, Miller, & Cypher (2027 p. 88-89)

185

Oxytocin-Induced Tachysystole
Category I tracing

- Turn pt to lateral position
- Give 500ml fluid bolus
- If u/c has not returned to normal after 10-15 min
  - ↓ Pitocin by 1/2
- If no change in u/c in next 10-15 min d/c Pitocin until normal u/c are observed
- If Pitocin has been off for < 20-30 min restart at ½ the rate that caused the tachysystole
- If Pitocin has been off for > 30-40 min, resume at the initial starting dose

186

Oxytocin-Induced Tachysystole
Category II tracing

- Discontinue Pitocin
- Turn pt to lateral position
- Give 500ml fluid bolus
- Consider Terbutaline 0.25 mg subcutaneous
- If Pitocin has been off for < 20-30 min restart at ½ the rate that caused the tachysystole
- If Pitocin has been off for > 30-40 min, resume at the initial starting dose

187

Keep this in mind:

D/C Pitocin
- Resolution 14.2 min

D/C Pitocin & Give 500ml Fluid Bolus
- Resolution 9.8 min

D/C Pitocin & Give 500ml Fluid Bolus & turn pt to lateral position
- Resolution 6.1 min

188

What might do we do when the pt enters active phase of labor & is making adequate labor progress

Oxytocin may be decreased or discontinued

189

Explain this Statement

- Use caution and clinical judgment when increasing pitocin right before a combined spinal/epidural or an epidural is inserted…

190

Rapid Pain Relief

When women in labor experience fear or distress large amounts of catecholamines are produced

High levels of catecholamines have a tocolytic effect

Effective pain relief causes a significant decrease in maternal circulating catecholamines, especially epinephrine

191

Pitting To Distress????

- There is no place in modern obstetric practice for "pitting to distress," "pitting through" a pattern of excessive uterine activity, or continuing to blindly increase the oxytocin dose until the 1-minute Apgar score is recorded.

Clark, Simpson, Knox, & Garite (2009)

192

For Example...

- A difficult situation/dilemma...
  - decreasing or discontinuing oxytocin for a fetal heart rate pattern with decelerations
- Pattern resolves and oxytocin restarted
- Abnormal pattern reappears
- Oxytocin decreased or discontinued
- Patient stops progressing in labor without oxytocin.....

193

May be appropriate to continue the oxytocin despite the decelerations

- Especially if spontaneous or elicited accelerations are present

Written documentation of the plan by the provider explaining why the oxytocin was necessary and why it was appropriate to continue in this situation is important…

- In other words, describing the use of clinical judgment and critical thinking….

Freeman et al (2012, p. 134)

194

Nurse's Responsibility

- Collaborate with the provider regarding the situation
- If disagreement with the plan
  - initiate the chain-of-communication

195

Oxytocin Checklist Protocol

- Clark et al (2007) found that using these checklists
  - Reduced maximum infusion rates without lengthening labor or increasing operative intervention
  - Cesarean rate declined system-wide
  - Newborn outcome appears to be improved
- Review Clark, et al (2007)
  - Pre-oxytocin checklist and
  - Oxytocin In-use checklist

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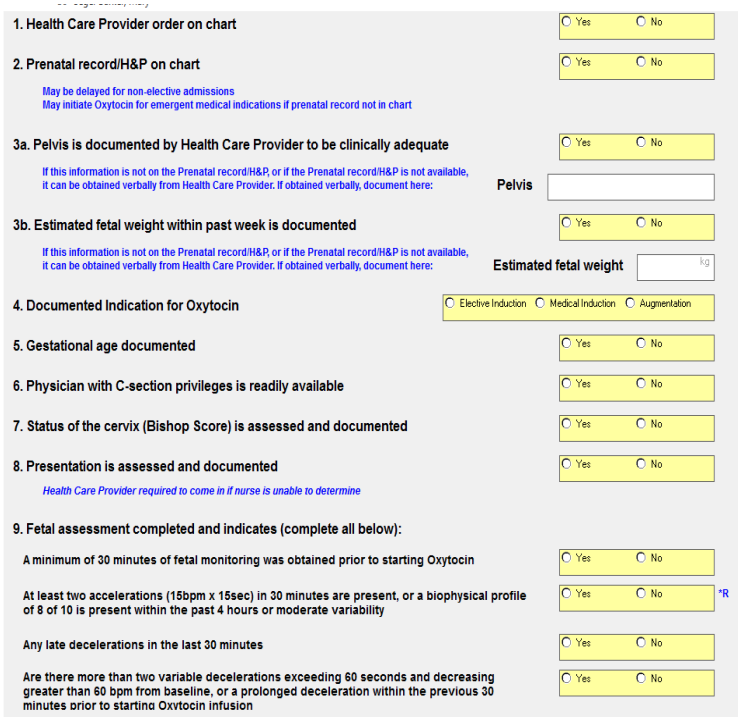

1. Health Care Provider order on chart — ○ Yes ○ No

2. Prenatal record/H&P on chart — ○ Yes ○ No

May be delayed for non-elective admissions
May initiate Oxytocin for emergent medical indications if prenatal record not in chart

3a. Pelvis is documented by Health Care Provider to be clinically adequate — ○ Yes ○ No

If this information is not on the Prenatal record/H&P, or if the Prenatal record/H&P is not available, it can be obtained verbally from Health Care Provider. If obtained verbally, document here: Pelvis

3b. Estimated fetal weight within past week is documented — ○ Yes ○ No

If this information is not on the Prenatal record/H&P, or if the Prenatal record/H&P is not available, it can be obtained verbally from Health Care Provider. If obtained verbally, document here: Estimated fetal weight kg

4. Documented Indication for Oxytocin — ○ Elective Induction ○ Medical Induction ○ Augmentation

5. Gestational age documented — ○ Yes ○ No

6. Physician with C-section privileges is readily available — ○ Yes ○ No

7. Status of the cervix (Bishop Score) is assessed and documented — ○ Yes ○ No

8. Presentation is assessed and documented — ○ Yes ○ No

Health Care Provider required to come in if nurse is unable to determine

9. Fetal assessment completed and indicates (complete all below):

A minimum of 30 minutes of fetal monitoring was obtained prior to starting Oxytocin — ○ Yes ○ No

At least two accelerations (15bpm x 15sec) in 30 minutes are present, or a biophysical profile of 8 of 10 is present within the past 4 hours or moderate variability — ○ Yes ○ No *R

Any late decelerations in the last 30 minutes — ○ Yes ○ No

Are there more than two variable decelerations exceeding 60 seconds and decreasing greater than 60 bpm from baseline, or a prolonged deceleration within the previous 30 minutes prior to starting Oxytocin infusion — ○ Yes ○ No

Pre-Oxytocin Checklist

197

This Oxytocin "In Use" Checklist represents a guideline for care, however individualized medical care is directed by the healthcare provider.

Oxytocin "In Use" Checklist

Fetal assessment parameters
□ **Met**
□ **Not met**

Uterine contractions parameters
□ **Met**
□ **Not met**

Review checklist each time Oxytocin dosage rate is increased or at least every 30 minutes if the dosage remains unchanged. Oxytocin should be stopped or decreased if the following checklist cannot be completed.

☐ Fetal assessment indicates:
- ☐ At least one acceleration of 15 bpm x 15 seconds in 30 minutes or minimal to moderate variability for 10 of the previous 30 minutes.
- ☐ No more than one late deceleration occurred.
- ☐ No more than two variable decelerations exceeding 60 seconds in duration and decreasing greater than 60 bpm from the baseline within the previous 30 minutes.
- ☐ Absence of prolonged deceleration(s).

☐ Uterine contractions:
- ☐ No more than 5 uterine contractions in 10 minutes for any 30 minute interval.
- ☐ No more than one contraction lasting greater than 120 seconds duration.
- ☐ Uterus palpates soft between contractions.
- ☐ If IUPC is in place, MVU must calculate less than 300 mm Hg and the baseline resting tone must be less than 25 mm Hg.

Sample Oxytocin Checklist

198

Combined checklist From a facility

Cervical Ripening/Pre-Oxytocin Checklist	
Physician/CNM order for oxytocin induction/aug…	
Current prenatal record available OR H&P docu…	
Pelvis documented by provider to be clinically a…	
Estimated fetal weight is documented	
Indication for induction or augmentation of labor…	
Gestational age documented	
Consent signed for induction/augmentation of l…	
Physician with C-section privileges aware and a…	
Cervix (bishop score) assessed and documented	
Presentation verified prior to initiation	
Fetal monitoring for 30 min prior to starting oxyt…	
At least 2 accelerations in 30 minutes OR mode…	
Fetus has had no late deceleration in the past 3…	
No more than 2 variable decelerations exceedi…	
Pre-Oxytocin Checklist is complete and all resp…	
Oxytocin In-Use Checklist	
At least one acceleration of 15 x 15 in 30 minut…	
No more than one late deceleration occurred	
No more than 2 variable decelerations exceedi…	
Absence of prolonged decelerations	
No more than 5 uterine contractions in 10 minut…	
No more than two contraction lasting greater th…	
Uterus palpates soft between contractions	
If IUPC is in place, MVU must calculate less tha…	
Oxytocin in-use checklist is complete and all re…	

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Maternal-Fetal Assessment

If unable to assess contraction pattern with an external monitor

- Notify provider to insert an IUPC if situation allows
- Or palpate and mark beginning and end of contractions on the paper strip

If unable to assess the fetal heart rate with an external monitor

- Apply a spiral electrode if technically possible

200

Get into the Habit of…

- Every time you turn pitocin up, down, or off ask yourself if you can explain to someone else why you are doing this…
- Patient safety is your first priority….

201

What If Labor Is Not Progressing?

- May need an IUPC in order to more accurately assess contraction activity
  - Calculate Montevideo units (MVU's)

202

Montevideo Units (MVU'S)

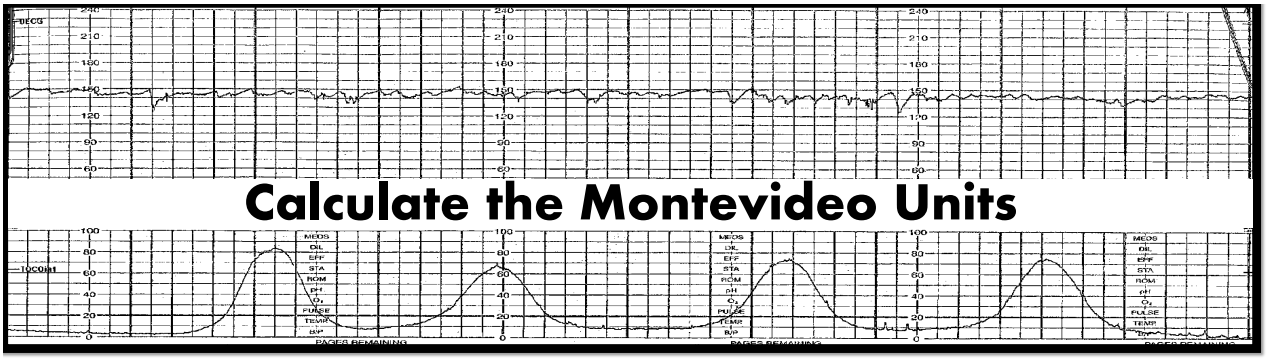
Measures the quality and sum of contractions

Only obtainable with IUPC

Calculate by looking at the contractions in a 10-minute tracing

- Subtract the resting tone from the peak for each contraction
- Then add all of the sums together

203



In first stage ranges from 100- 250 MVU's

May rise to 300 to 400 MVU's in second stage

Contraction intensities of ≥ 40 mmHg & MVUs of 80-120 are generally sufficient to initiate labor

204

Montevideo Units

- **In a retrospective report of induction of labor**
  - **91% of women achieved 200-224 MVU's**
  - **40% achieved at least 300 MVU's**

205

Failed Induction

If maternal/fetal status allow, cesareans for failed induction of labor 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

ACOG & SMFM (2014, p. 7) Recommendations for Safe Prevention of Primary Cesarean Delivery

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Case Review

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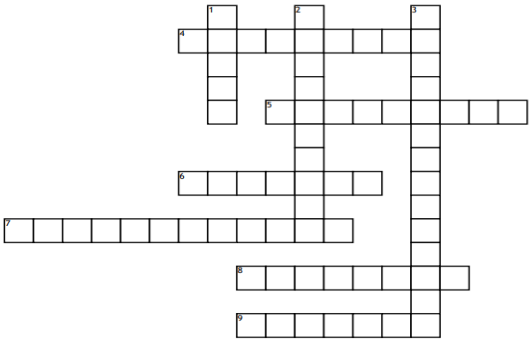

Across

4. One of the 5 "P"s - fetal position, presentation & size & shape of the fetal head

5. An infant born between 37.0-38.6 weeks gestation

6. The synthetic hormone that stimulates uterine contractions

7. Main complication of administration of misoprostol and cervidil

8. The endogenous hormone released by the posterior pituitary that stimulates uterine contractions

9. Plasma clearance of oxytocin is through the maternal _____ & liver

Down

1. Process by which the fetus is expelled by the uterus

2. Membrane stripping, amniotomy, laminaria are all examples of _____ methods of ripening

3. _____ softens the cervix & relaxes cervical smooth muscle in preparation for labor

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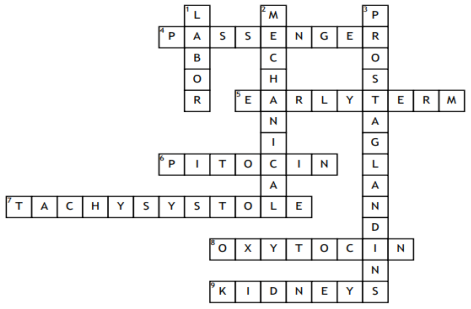
Cervical Ripening & Inductions



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210

What movie is this quote from??

211

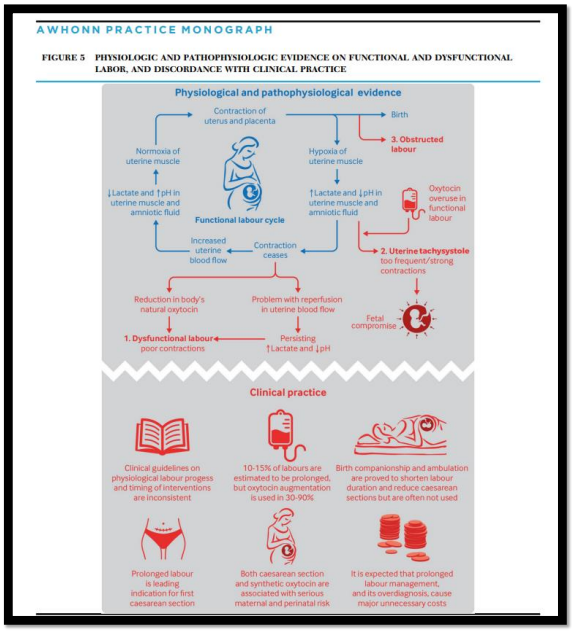
Oxytocin (Pitocin)

212

Homework

213

Physiologic and Pathophysiologic Evidence on Functional and Dysfunctional Labor and Discordance with Clinical Practice



AWHONN Practice Brief: Cervical Ripening and Labor Induction and Augmentation (2025)

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