

PRETERM LABOR

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Goals & Objectives

- Define Preterm Labor
- Identify common causes and risk factors that could be associated with PTL
- Discuss current meds for management of PTL
- Review nursing care for the prevention of PTL/PTB

Fight for Preemies

Marchofdimes.org/pretermlabor



Incidence

- Preterm birth is the leading cause of neonatal mortality and the most common reason for antenatal hospitalizations.
- In the United States 9.85% of all births occur before term. Oklahoma's PTB rate is 11.9%. (March of Dimes 2021)
- Preterm birth accounts for
 - 70% of neonatal deaths (birth to 1 month)
 - 36 % of infant deaths (1 month –1 year)
 - 25-50% of long-term neurological impairment in children
- 15 million infants are born premature worldwide
- 1 million infants die each year from PTB worldwide

Incidence

- 1.9% of preterm births in the U.S. are less than 32 weeks gestation
- 71% of PTB occur between the gestations of 34-36 weeks
- Preterm births account for 85% of all perinatal morbidity and mortality
- Preterm babies avg 16.8 days in the hospital, term baby avgs 2.3 days

So what is PTB? PTL???

- **Preterm Birth** (PTB) is birth occurring before 37 completed weeks of gestation. In 2018, preterm birth affected 1 out of every 10 infants born in the United States.
- The diagnosis of **Preterm Labor** (PTL) generally is based on clinical criteria of regular uterine contractions accompanied by a change in cervical dilation, effacement, or both.

OR...

- Initial presentation with regular contractions and cervical dilation of at least 2 cm.

RISK FACTORS FOR PRETERM BIRTH

- History of a preterm birth- Single greatest risk factor
- Current multifetal pregnancy
- Uterine/cervical abnormalities

POSSIBLE RISK FACTORS

- Chronic Health Problems
 - Hypertension
 - Diabetes Mellitus
 - Obesity
- Behavioral and Environmental Risks
 - Late or no prenatal care
 - Smoking
 - Domestic Violence
 - Stress

POSSIBLE RISK FACTORS

- Demographic Risks
 - Non-Hispanic black race
 - < Age 17
 - > Age 35
 - Low socioeconomic status
- Genetics
- Assisted Reproductive Technologies
- Medical Risks in Current Pregnancy

*WHAT ARE SOME OF THE MOST
COMMON COMPLAINTS FROM
PREGNANT WOMEN?*



SIGNS & SYMPTOMS OF PRETERM LABOR

- Uterine contractions every 10 minutes or more often
- Menstrual-like cramps
- Low, dull backache
- Pelvic pressure
- Abdominal cramping
- Diarrhea
- Change in amount or color of vaginal discharge
- Vaginal bleeding
- General feeling that “something is not right”





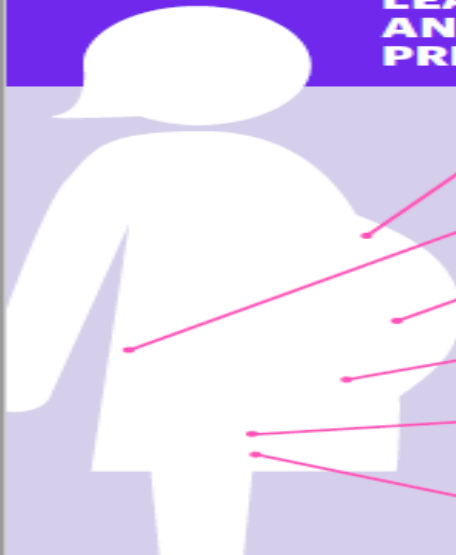
SIGNS AND SYMPTOMS OF PRETERM LABOR



Preterm labor is labor that happens too early, before 37 weeks of pregnancy.

Your baby could be born too soon and have serious health problems.

LEARN THE SIGNS AND SYMPTOMS OF PRETERM LABOR:



Regular or frequent contractions that may or may not be painful

Constant low, dull backache

Belly cramps with or without diarrhea

The feeling that your baby is pushing down

Change in your vaginal discharge or more vaginal discharge than usual

Your water breaks

WHAT YOU CAN DO:

If you have even one sign or symptom of preterm labor, call your health care provider right away.



When you see your provider, she may check your cervix to see if you're in labor. If you are, she may give you treatment to help stop labor or to improve your baby's health before birth.

Now What?

Your role in the prevention and management of PTL includes:

- Providing Education and Support
- Early recognition and identification of women at risk
- Initiating and maintaining medical management
- Providing family centered care
- Initiating interventions that are shown to improve neonatal outcomes
- Advocate for protocols that allow standardization of care and promote early recognition

Identify preterm labor as quickly as possible and notify the provider

Nursing Assessment of the PTL Patient

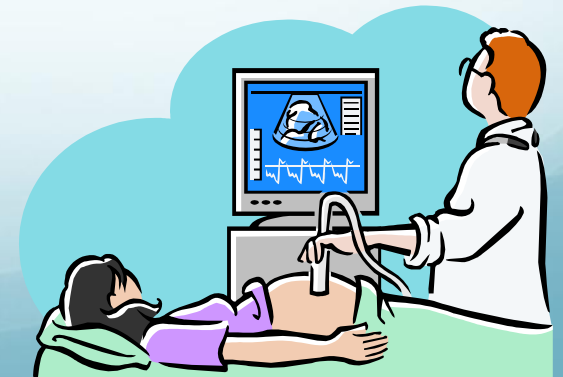
- Assess medical hx, prenatal hx, & review prenatal record for pregnancy course and labs
- Perform a physical exam focusing on symptoms and complaints
- Identify Gestational age
- Obtain objective data
 - Monitor FHT's and UC's
 - Obtain routine labs: CBC and UA
 - Obtain VS
 - Obtain fFN
 - Assess for ROM
 - Assess Cervical status

Early Recognition

- Early recognition of women with high risk factors allows for increased education and awareness.
- Arming our patients with education related to their risks can result in ***decreasing*** their risks.
- Early recognition of women in the early stages of PTL allows for the administration of antenatal corticosteroids and transfer to a hospital with a NICU if indicated
 - Both of which have been proven to be effective in improving neonatal outcomes.

Medical Diagnostic Exams

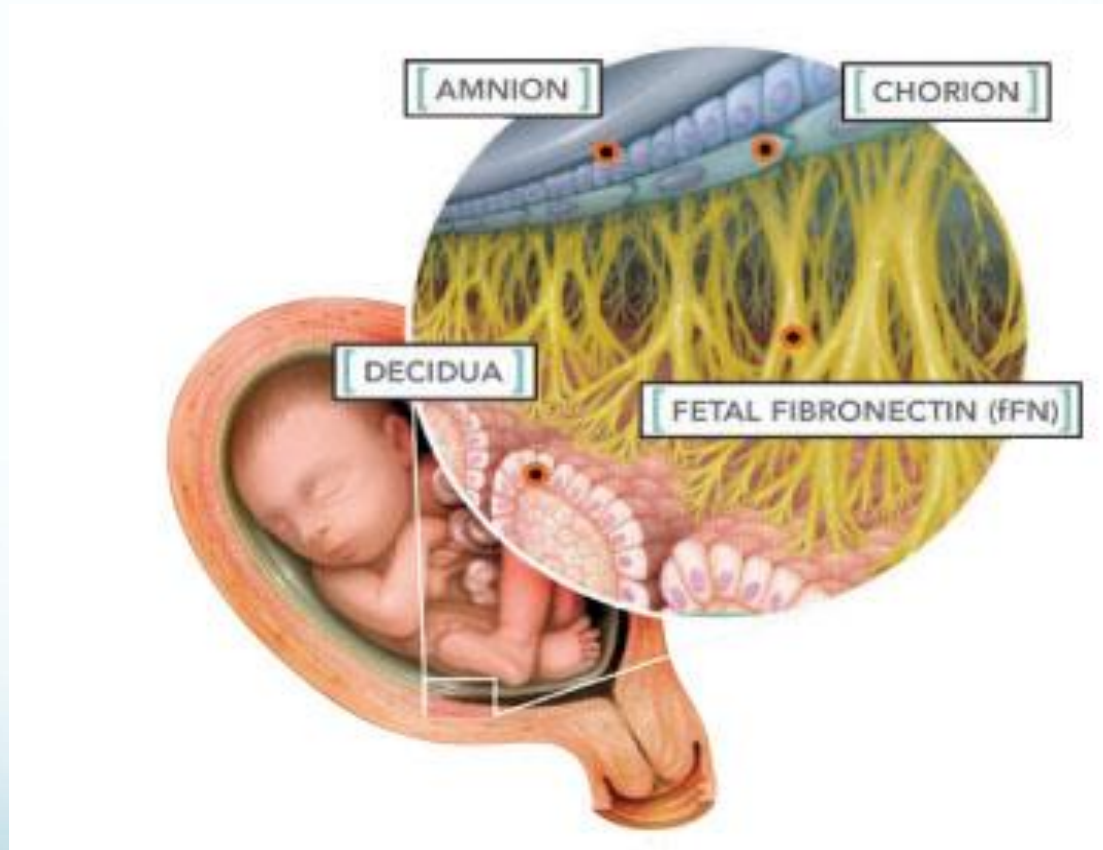
- Biochemical Markers- Fetal Fibronectin (fFN)
 - Swab is collected from the external cervical os via a speculum exam
- Transvaginal Ultrasound- normal cervical length in the midtrimester of pregnancy varies from 10-50 mm. The shorter the cervix, the higher the risk of preterm birth.



Fetal Fibronectin

- Only biochemical marker that has an excellent predictive value for preterm birth
- What is “fetal fibronectin”?
 - It is the adhesive glycoprotein that attaches the fetal membranes to the endometrium.
- Normally found in secretions before 20 weeks and again after 34 weeks
- Approved by the FDA for use as an aid in assessing the risk of preterm birth in women from 22-35 weeks.

Maternal-Fetal Interface



CONTRAINDICATIONS

- Vaginal examination within the past 24 hours
- Cervical dilation greater than 3 cm
- BBOW or Ruptured membranes
- Cerclage in place
- Moderate to gross vaginal bleeding
- Suspected or known placenta previa or abruption
- Sexual intercourse within the past 24 hours

What to do once PTL is
identified?

Is Patient Moderate or High
Risk??

Moderate Risk of PTB



Disposition: Home

- Nursing Interventions
 - Teach home care instructions
 - Educate patient on signs and symptoms of PTL
 - Discuss risk factors and provide education
 - Stress importance of follow-up care
 - Possible administration of antenatal corticosteroids
- Education is Key!!!!



High Risk/PTL Identified

Disposition: Admit/ transfer



- Nursing Interventions
 - Continued evaluation and surveillance
 - Administer antenatal corticosteroids
 - Initiate and manage tocolytic therapy
 - Educate patient and family about what to expect

Indications for Tocolytic Medication Therapy

- Diagnosis of Preterm Labor
- Gestation is beyond 22 weeks but less than 34 weeks
- Live fetus without signs of severe distress, congenital anomalies incompatible with life, or maternal contraindications

Contraindications for TOCOLYTIC THERAPY

- *Preeclampsia or eclampsia*
- *Placental abruption or acute hemorrhage*
- *Intrauterine infection*
- *Acute fetal distress (except intrauterine resuscitation)*
- *Maternal hemodynamic instability or complications*
- *Fetal demise (singleton)*
- *Advanced cervical dilatation*

CURRENT MEDICATIONS FOR MANAGEMENT OF PTL

- Beta-Adrenergic Receptor Agonist
 - Terbutaline/Brethine
- Calcium Channel Blocker
 - Nifedipine/Procardia
- NSAIDS
 - Indomethacin/Indocin
- CNS Depressant
 - MAGNESIUM SULFATE



TERBUTALINE

- Receptors are found in the heart, liver, kidney, small intestine, smooth muscle of the uterus, blood vessels, diaphragm and bronchioles.
- Agonists bind to the receptor sites and reduce levels of calcium.
- Decreased calcium levels cause smooth muscle contraction to be less effective-uterine contractions may cease.
- Continued exposure to medication can lead to desensitization.

Side Effects

- MATERNAL
 - Tachycardia
 - Hypotension
 - Tremor & palpitations
 - Nervousness
 - Headache
 - Hyperglycemia
 - Cardiomyopathy
 - Pulmonary Edema
- FETAL/NEONATAL
 - Tachycardia
 - hyperinsulinemia



Assessments

- Vital Signs
 - Hold if maternal pulse > 120 bpm
 - Monitor and Record BP; Pulse; and Pulse Oximetry as follows:
 - Baseline data, then every 15 minutes X 2, then in 30 minutes
- Auscultate Breath Sounds prior to each dose and prn throughout therapy.
- Fetal Heart Rate
 - Hold if FHR > 180 bpm

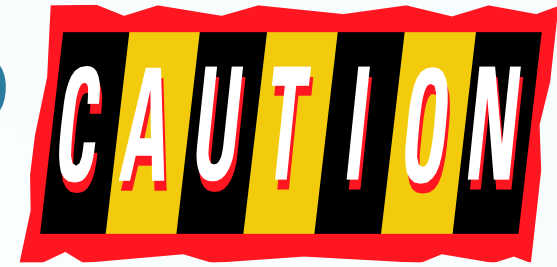
Nifedipine (Procardia)

- Action: Calcium channel blocker, relaxes smooth muscle of the uterus
- **Use cautiously when administered concurrently with Magnesium**
 - **May cause severe hypotension and neuromuscular blockade**
- **Contraindications:**
 - Patient with maternal liver disease, HTN, Diabetes
 - Multiple gestation, intrauterine infection
 - Patient currently on Magnesium Sulfate

Indomethacin (Indocin)

- Action: blocks prostaglandin synthesis
- Use cautiously in patients with infections due to the anti-inflammatory properties.

ISMP HIGH ALERT MED



MAGNESIUM SULFATE IS an *ISMP (Institute for Safe Medication Practices) HIGH-ALERT MEDICATION* because of the potential for toxicity that could result in causing significant harm to the patient.

LOOK FOR THE SIGNS OF TOXICITY!

MAGNESIUM SULFATE

- Magnesium interferes with calcium uptake in the cells of the myometrium
- Myometrial cells need calcium to contract
- Magnesium sulfate relaxes smooth muscle throughout the body



Contraindications

- Patient on Procardia (Calcium Channel Blocker)
- Muscular Dystrophy
- Myasthenia Gravis
- Absent DTRs
- History of MI
- Respirations $< 12/ \text{min}$
- Urine output $< 30 \text{ ml/hr}$ (Renal Failure)

Potential Side Effects

- MATERNAL
 - Flushing, warmth
 - N/V
 - Lethargy
 - Pulmonary edema
- S/S of Toxicity:
 - Absent DTRs
 - Respiratory Depression
 - Slurred speech
 - Hypocalcemia
 - Cardiac conduction
- FETAL/NEONATAL
 - Decreased variability
 - Decreased fetal breathing movements
 - Neonatal drowsiness
 - Hypocalcemia
 - Neuromuscular depression

Magnesium Toxicity

Antidote-Calcium Gluconate

- Calcium gluconate is an electrolyte replacement solution that is administered intravenously to reverse magnesium toxicity in pregnant or postpartum patients.
- **Administer** One gram (10 ml of 10% solution) IVP over 3-5 minutes

Other Meds Used in PTL Management

- Antibiotics
 - Contraindicated for intrauterine infections
- Progesterone
 - Limited research related to long term safety

Corticosteroids

- *Single most effective intervention to improve fetal well being*
 - Betamethasone or Dexamethasone
- Antenatal corticosteroids do not prevent PTB but do prevent major complications in the neonate.

Interventions for Managing Potential Patient Stress & Depression

- Enhance intimate social support
- Allow her to maintain some control
- Listen to your patient
- Find out what is most stressful to the patient
- Provide consults:
 - Social service
 - NICU
 - Nutrition
 - Recreational therapy



PTB

- Short term problems:
 - Respiratory distress syndrome
 - Intraventricular hemorrhage
 - Necrotizing enterocolitis
 - Bronchopulmonary dysplasia
 - Sepsis
 - Patent ductus arteriosus
- Long term problems:
 - Cerebral palsy
 - Retinopathy of prematurity
 - Autism
 - Hearing loss
 - Neurological impairment
 - Chronic lung problems



GOALS of PTL Management?

- Early recognition of those at the greatest risk
 - allow for optimal patient education
 - provide for more frequent observation and assessment
- Patient education is a critical component of prevention and managing PTL
- Delay delivery by stopping or slowing contractions to allow for the administration of antenatal corticosteroids and/or allow for the transfer to a tertiary care facility
- Optimizing fetal status prior to delivery

Admit/Transfer/Discharge Scenarios

- **Scenario 1:**

G3P2 at 30 weeks gestation WITH c/o CRAMPING AND INCREASED DISCHARGE. Pt has a history of 1 previous preterm birth. Svc:1cm/50%/-2 (no change in 4 hours) WITH A NEGATIVE Ffn

- **Scenario 2:**

G2P1 at 28 weeks gestation c/o backache and pelvic pressure. Pt has an unremarkable health history. Pt's cervix has changed from finger tip to 2cm/70%/-2 in 3 hours. Cervical length is measured at 20 mm

Admit/Transfer/Discharge??

- **Scenario 3**

G2P1 at 27 weeks Gestation with c/o low dull back ache, Pelvic Pressure, and Vaginal bleeding. Pt conceived by IVF.

Pt is having contractions q 15-20 minutes.
SVE: 1+/70%/-3 with no change in 2 hours.

Ffn is negative

Admit/Transfer/Discharge??

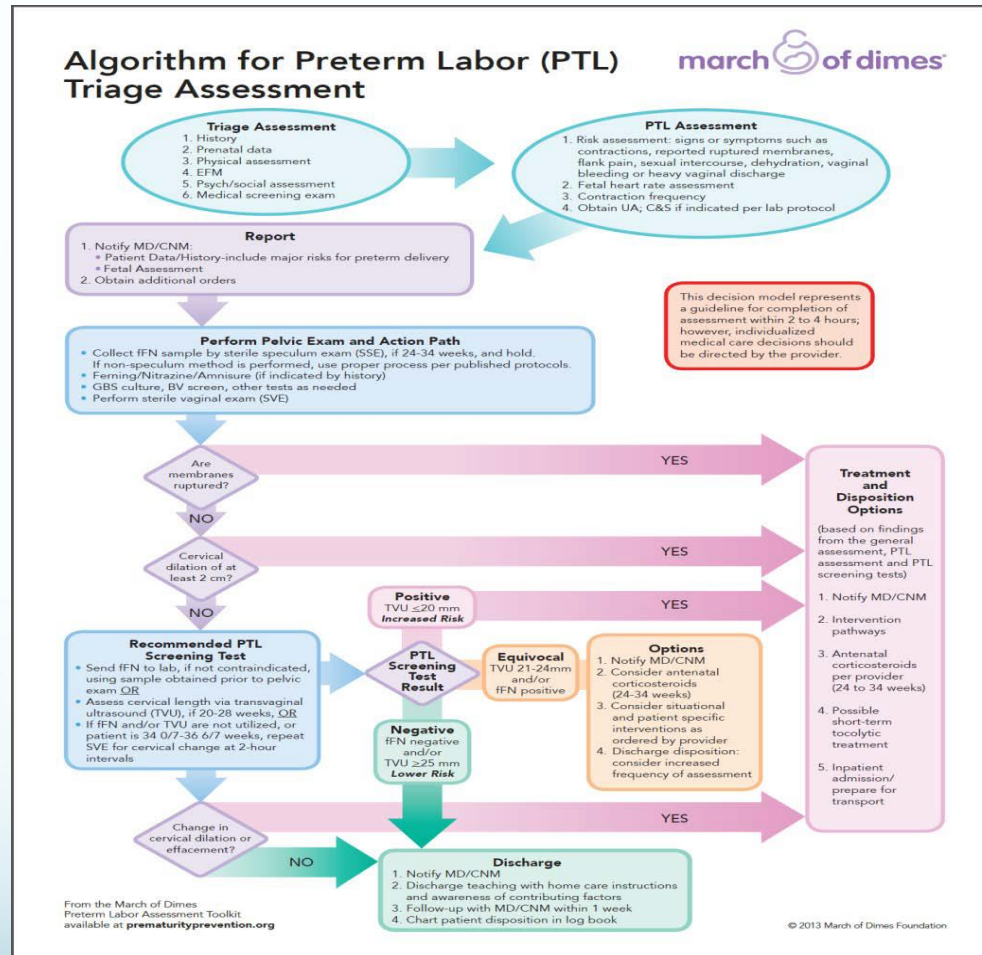
- **Scenario 4**

G2P1 at 33 weeks gestation presents for scheduled NST for history of Gestation Hypertension.

Pt denies any complaints.

Toco reveals the patient is having regular UCs and SVE is 3/80%/-1. No other testing available.

PTL Algorithm



March of Dimes Peristats

STATE SUMMARY FOR OKLAHOMA ▾



- In 2021, **1 in 8 babies** (11.9% of live births) was born preterm in Oklahoma.
- In Oklahoma in 2021, **77.9% of infants** were born to women receiving adequate/adequate plus prenatal care.
- In 2021, **1 in 11 babies** (8.8% of live births) was low birthweight in Oklahoma.
- In Oklahoma in 2021, **32.5% of live births** were cesarean deliveries.
- In Oklahoma in 2019, 344 infants died before reaching their first birthday, an infant mortality rate of **7.0 per 1,000 live births**.
- In 2021, about **1 in 5 women** of childbearing age (19.0%) was uninsured in Oklahoma.


2022 REPORT CARD GRADE

LEARN MORE ABOUT THE FACTORS IN YOUR STATE.

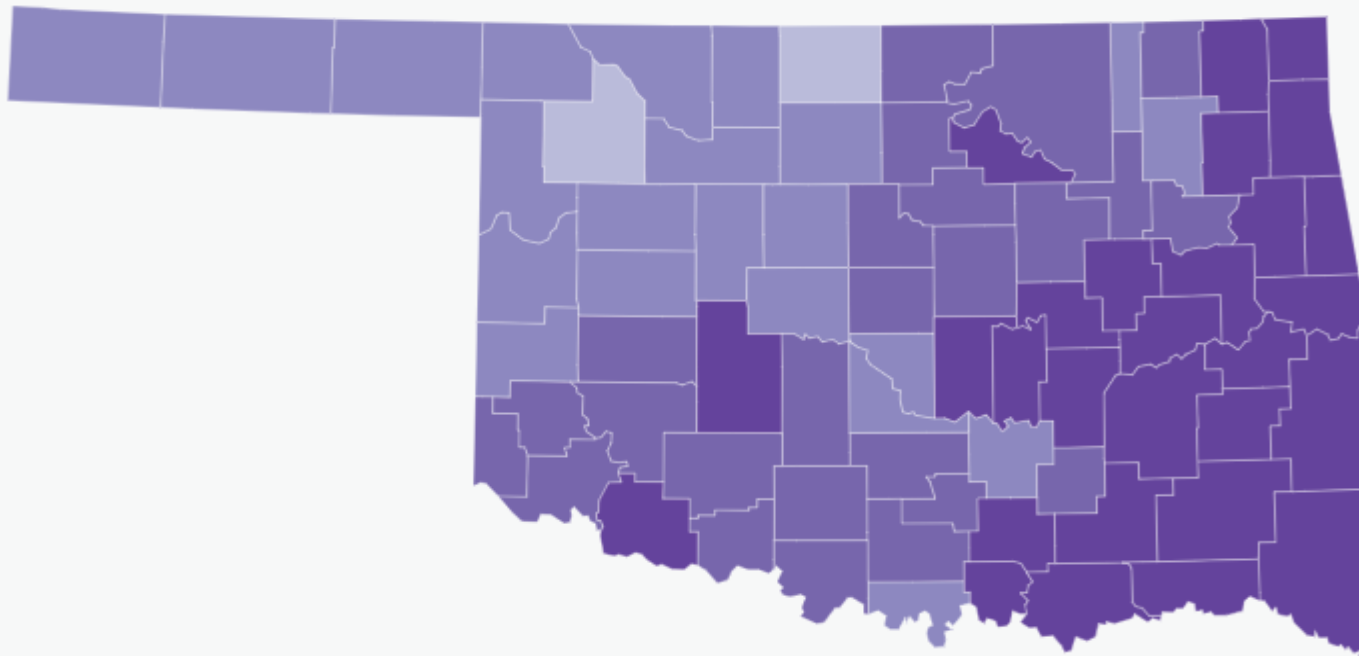
PRETERM BIRTH GRADE **F**
PRETERM BIRTH RATE **11.9%**



March of Dimes Maternal Vulnerability Index

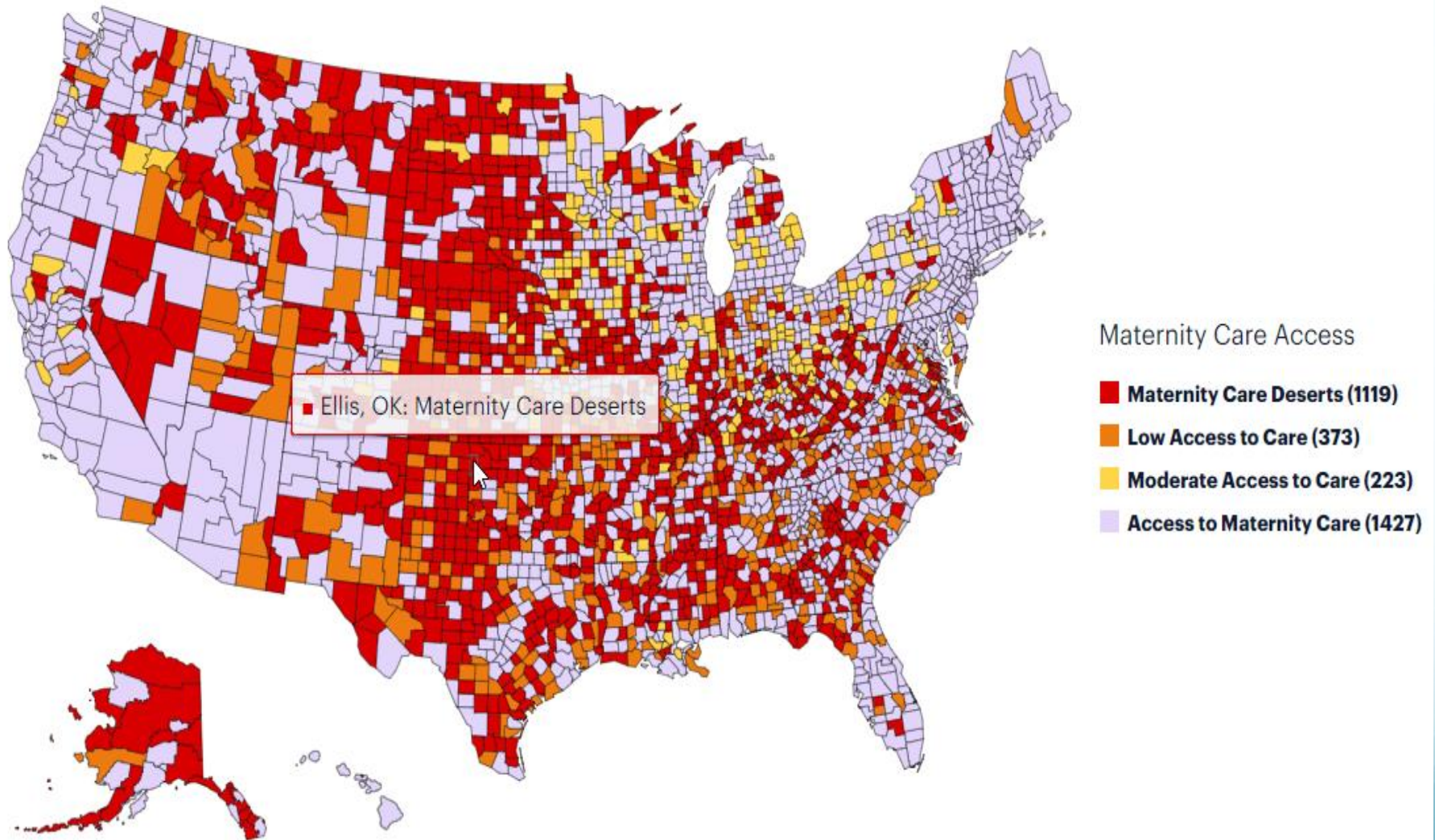
Identifies where and why moms are vulnerable to poor pregnancy outcomes & pregnancy-related deaths. Looks at clinical, social, contextual & environmental factors that influence health outcomes. A higher score indicates  vulnerability.

Where in Oklahoma are mothers most vulnerable?



● 0-19.9 ● 20-39.9 ● 40-59.9 ● 60-79.9 ● 80-100

Maternity Care Deserts, 2020



References

www.hologic.com

Marchofdimes.org

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