Strategies to Reduce the Impact of Prematurity

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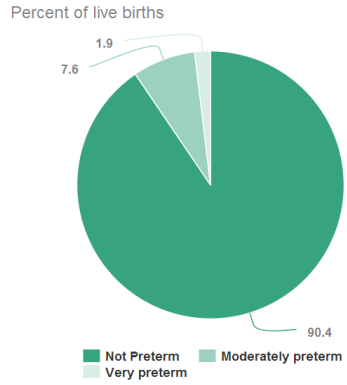
Incidence of Preterm Births in Orange County 2014



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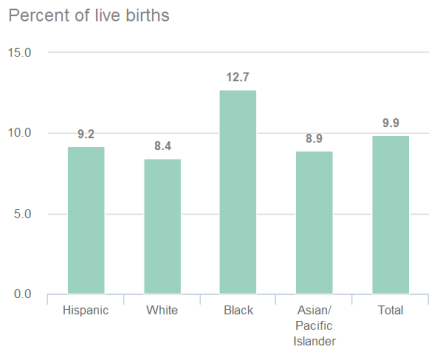
Not preterm is greater than or equal to 37 weeks gestation. Preterm is less than 37 weeks of pregnancy. Very preterm is less than 32 weeks. Moderately preterm is 32-36 completed weeks of gestation.

Source: National Center for Health Statistics, final natality data. Retrieved October 31, 2017, from www.marchofdimes.org/peristats.

Incidence of Prematurity in Orange County by Race 2014



Data only available for categories shown.

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All race categories exclude Hispanics. Preterm is less than 37 weeks of pregnancy.

Source: National Center for Health Statistics, final natality data. Retrieved October 31, 2017, from www.marchofdimes.org/peristats.

Recurrent Preterm Births

- 4,025,933 births in the U.S. each year
- 12% deliver before 37 weeks (~480,000)
- 48,000 born to mothers of previous preterm infant
  - Martin J, et al. 2002

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Cost of Prematurity

- In 2007, the Institute of Medicine reported that the cost associated with premature birth in the United States was $26.2 billion each year
- $16.9 billion in medical and health care costs for the baby.
- $1.1 billion for special education services.
- $611 million for early intervention services.
- $1.9 billion in labor and delivery costs for mom

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PREVENTION OF PRETERM BIRTH

- Primary Prevention - Interventions designed for the entire pregnant population (i.e. early prenatal care)
- Secondary Prevention - Interventions designed for high-risk patients (i.e. multiple gestation) who have not experienced preterm labor in the current pregnancy(i.e. bed rest)
- Tertiary Prevention - Interventions applied to patients who have experienced, and are being treated successfully for preterm labor in the current pregnancy (i.e. Tocolytics)

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Can Preterm Births be Prevented?

- Primary prevention is the goal
  - especially risk reduction in the preconceptional period and early in pregnancy
- Preterm prevention programs have focused on risk assessment or prediction of preterm labor
  - risk assessment identifies only half of preterm births
  - during pregnancy most biomarkers, even in combination with risk factors, do not have good positive predictive values
- Causation is the great unknown

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Major Pathways to Preterm Labor

- Inflammation/infection (ascending), 40%
  - cytokines
- Stress (maternal/fetal), 25%
  - CRH
- Bleeding (decidual hemorrhage, abruption), 25%
  - thrombin
- Stretching (uterine distention), 10%

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Why PTB Statistics Don't Change

- Interventions for VLBW (<26 weeks)
- MD Allowed Delivery >32-34 weeks
- More Multi-Fetal Gestations
- Aggressive Mix of Medical Disorders
- Therapeutic Nihilism
- Many PTB Related to Social Factors We Don't Address as a Society
  - —**Teen Pregnancy, Ethnicity, Poor, Work, Illegitimacy, Drugs**

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Primary Interventions that Work

- Early, comprehensive, accessible prenatal care
- Educate all pregnant women about preterm labor signs and symptoms
- Screen and treat all UTIs and STIs
- Identify cigarette smokers and intervene
- Assess for alcohol use and intervene
- Identify illicit substance users and intervene
- Assess for domestic violence and intervene
- Eliminate folic acid deficiency
- Reduce major stress levels early and throughout pregnancy

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March of Dimes

Secondary Successful Interventions

- Progesterone study (high risk by history)
  - Multisite US, MFMU-NICHD
    - ↓ by ~ 30%
    - Meis P, et al. NEJM. 348:2379-85, 2003.
  - Brazil, da Fonesca
    - ↓ by 50%+
    - daFonesca, et al. Am J Obstet Gynecol. 188(2):419-24, 2003.
- Fetal Fibronectin
- Transvaginal Sonography

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17 Alpha-Hydroxyprogesterone Caproate

- Relaxes uterine muscle during pregnancy
- Studies suggest that 17P reduces the risk or recurrent PTB
- In 2003, ACOG endorsed the use of 17P for patients with history of PTB
- FDA Approves Makena to Reduce Risk of Preterm Birth in At-Risk Pregnant Women in 2/2011
- Exclusivity ends on 2/2018

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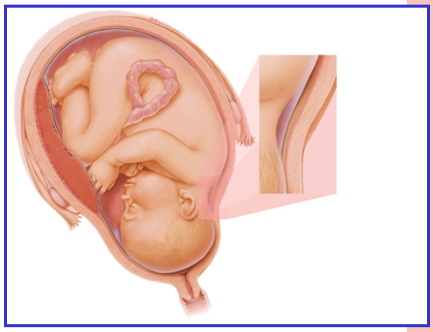
Fetal Fibronectin

- A glycoprotein secreted by fetal membranes that is found in the choriodecidual junction
- Responsible for cellular adhesiveness
- Greatest benefit is in identifying women with false labor



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Potential Benefits of Fetal Fibronectin

- More accurately identify women at risk
- Avoid unnecessary treatment
- Able to detect accurately women who are not at risk for a preterm birth
- Develop surveillance programs for women at risk
- Avoid unnecessary expense

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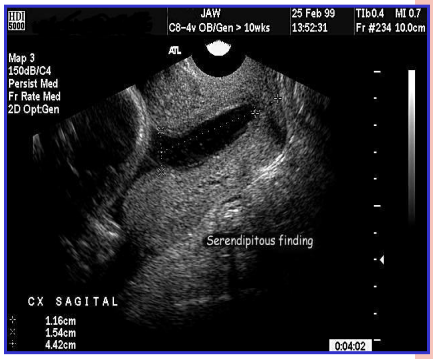
Transvaginal Sonograms

- Strong correlation between a short cervix and PTL
- Transvaginal sonograms have been found to be more predictive than pelvic exam in identifying women at risk for PTD
- Also can help identify women with low risk for PTD



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Tertiary Interventions in Use

- Tocolytic therapy
- Steroids for fetal lung maturity
- Neonatal surfactant
- Outpatient management

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Table 1. General and Obstetric Characteristics of the Study Population

	Delivery ≥ 37 wk (n = 64)	Delivery < 37 wk (n = 45)	*P*
Maternal age (y)	28.5 (25, 31.5)	28 (23, 32)	.78
Gestational age (wk)			
On admission	30 (27.3, 31.5)	29 (26.1, 31)	.18
≥ 30 [n (%)]	33 (51.6)	18 (40)	.25
Cervical length (mm)			
On admission	20 (15, 22)	16 (10, 19)	< .001
After tocolysis	23 (18.5, 28)	18 (10, 25)	.001
Variation after tocolysis	4 (0, 8.5)	1 (0, 6)	.16

Median (first, third quartile) values are reported, except where otherwise indicated.

Median (first, third quartile) interval from tocolysis to delivery was 53.0 (35.0, 70.0) days

Rozenberg: Obstet Gynecol, Volume 104(5, Part 1).November 2004.995-999

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"That's like waiting for a heart attack to occur then you try to prevent it"…….

3rd yr FSU med student

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Bottom Line

- Think 17P for patients with history of preterm births
- Treat cervical shortening and NOT cervical dilation

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