IT'S ALL ABOUT BIRTH SPACING

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MATERNAL FETAL MEDICINE
DISCLOSURES

• I have no conflicts of interest.
LEARNING OBJECTIVES:

1. Describe the association between birth spacing and pregnancy outcomes.
2. Discuss how a prenatal contraceptive plan might influence birth spacing.
3. Outline how a postnatal birth plan might also affect birth spacing, especially after complicated pregnancies.
CASE: MFM CONSULT

• 29 year-old G4P2102 at 13 weeks' gestation

• Preceding pregnancy complicated by PPROM at 20 weeks' gestation, abruption and delivery by classical c/s at 28 weeks

• Subsequent neonatal demise

• Short inter-pregnancy interval (6 weeks!)
QUESTION

• How does short inter-pregnancy interval affect this pregnancy?
  – Risk of preterm birth?
  – Risk of uterine rupture?
  – Risk of other adverse pregnancy outcomes?
INTERPREGNANCY INTERVAL

- It's worth talking about...
  - If it is a true biologic risk factor for adverse pregnancy outcome,
    ➢ IT IS A MODIFIABLE RISK FACTOR

Genes and environment have been difficult to overcome...
we need to focus on modifiable risk factors
INTERPREGNANCY INTERVAL

• Interpregnancy interval (IPI), also referred to as birth to pregnancy interval, is defined as the spacing between a live birth and the beginning of the following pregnancy
  – Adverse pregnancy outcomes have been associated with both short and long IPI
  – Bulk of risk is with short IPI
INTERPREGNANCY INTERVAL

- Short interpregnancy interval (IPI)
  - No standardized definition
  - Less than 3, 6, 9, 12 or 18 months

INTERPREGNANCY INTERVAL

• Short interpregnancy interval (IPI)
  – Using a definition of <18 months
  • What percentage of U.S. women have short IPI?
    – 10%
    – **30%**
    – 50%
    – 80%

INTERPREGNANCY INTERVAL

• Short interpregnancy interval (IPI)
  • Associated with younger maternal age
    – Using a definition of <18 months, over half of teen births have short IPI
    – In the first year postpartum, at least 70% of pregnancies are unintended

INTERPREGNANCY INTERVAL

• Long interpregnancy interval (IPI)
  – Usually defined as IPI longer than 60 months (5 years)
  – Associated with
    • Older maternal age
    • Education < bachelor's degree
    • Unmarried status
    • Lowest rates among non-Hispanic white women

PREGNANCY INTERVALS BY STATE

Utah has the lowest rate of long IPI in the nation, at 12.5%
INTERPREGNANCY INTERVAL

• Why is interpregnancy interval related to obstetric outcomes?
  – First, is it independently associated?
  – Or is it secondary to confounding factors?
    • Maternal age
    • Maternal health and fertility
    • Socioeconomic status
    • Pregnancy health behaviors
INTERPREGNANCY INTERVAL

- Why is interpregnancy interval related to obstetric outcomes?
  - Short IPI
    - Maternal depletion hypothesis:
      - Maternal nutrients (e.g. folate) may not be replenished sufficiently between closely-spaced pregnancies, particularly if breastfeeding
    - Residual inflammation or even infection of the genital tract
    - Incomplete healing
INTERPREGNANCY INTERVAL

• Why is interpregnancy interval related to obstetric outcomes?
  – Long IPI
    • Physiologic regression hypothesis:
      – Pregnancy causes important time-limited physiologic adaptations of the reproductive system, such as an increase in blood flow to the uterus, that wane in women with prolonged IPI
INTERPREGNANCY INTERVAL

• Why is interpregnancy interval related to obstetric outcomes?
  – Longer IPI
    • Women who take longer to conceive are more likely to have chronic illness or subfertility – both of which are associated with higher pregnancy risks
INTERPREGNANCY INTERVAL

• Why is interpregnancy interval related to obstetric outcomes?
  
  – Longer IPI
    
    • Example: Women who get pregnant rapidly after miscarriage (< 6 months) are at LOWER risk of recurrent miscarriage and preterm birth than those who have a longer interval

## IPI AND PREGNANCY OUTCOMES

<table>
<thead>
<tr>
<th></th>
<th>Short IPI</th>
<th>Long IPI</th>
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<tbody>
<tr>
<td>Small for gestational age</td>
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<td>Preterm premature rupture of membranes</td>
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<td>Preterm birth</td>
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<td></td>
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<tr>
<td>Stillbirth</td>
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<tr>
<td>Neonatal or infant death</td>
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<tr>
<td>Miscarriage</td>
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<tr>
<td>Maternal anemia</td>
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<td>Preeclampsia</td>
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<td>Uterine rupture in TOLAC</td>
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<tr>
<td>Congenital anomalies</td>
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Short & Long IPI Increase Risk of Preeclampsia

• Long IPI is a classic risk factor
  – Risk is directly proportional to the time elapsed since the previous birth, with an adjusted OR of approximately 1.1 for every additional year IPI.

• However, for women with previous pre-eclampsia, risk decreases with increasing time interval between deliveries

SHORT IPI INCREASES RISK OF PRETERM BIRTH

• IPI < 6 months
  – Risk of PTB ↑ by 40-70% (OR 1.4-1.7)
  – Risk of spontaneous preterm birth may be even higher (OR 3-4)
  – Significant but lesser effect for longer intervals

SHORT IPI INCREASES RISK OF PRETERM BIRTH

• IPI < 6 months
  – Effect may be magnified if the preceding pregnancy was complicated by spontaneous preterm birth!

RECIPE for “obstetrical badness”:

Preterm birth + short IPI =
SHORT IPI INCREASES RISK OF UTERINE RUPTURE

• Short interpregnancy interval is associated with a 2-3 fold increase in risk of uterine rupture during TOLAC
• Also increases the risk of uterine rupture in an unscarred uterus
• Risk in the setting of prior classical?

CASE: MFM CONSULT

• 29 year-old G4P2102 at 13 weeks' gestation

• Preceding pregnancy complicated by PPROM at 20 weeks' gestation, abruption and delivery by classical c/s at 28 weeks

• Subsequent neonatal demise

• Short inter-pregnancy interval (6 weeks!)
QUESTION

• How does short inter-pregnancy interval affect this pregnancy?
  – Risk of preterm birth?
    • At least 3-4 fold higher
  – Risk of uterine rupture?
    • At least 2-3 fold higher
  – Risk of other adverse pregnancy outcomes?
    • Increased risk of myriad complications - preeclampsia, IUGR, stillbirth, neonatal death
WHAT DO WE RECOMMEND?

• Best data suggests, from an obstetrical standpoint, that an IPI > 18 months and < 5 years is optimal

• IPI >18 months is especially critical in women with pregnancy complications like preterm delivery and preeclampsia
WHAT DO WE RECOMMEND?

• World Health Organization (WHO) and the United States Agency for International Development (USAID)
  – After live term birth, recommend an IPI >2 and <5 years
    • In agreement with the United Nations Children's Fund (UNICEF) two-year breastfeeding recommendation
    • 2 year minimum makes guidelines simpler, although 18 months better reflects the data
WHAT DO WE RECOMMEND?

• Whether clinic management should be altered in women with short or long IPI is up for debate, and should be individualized
  – Growth ultrasounds
  – Antenatal testing
  – Timing and mode of delivery
ROOM TO INDIVIDUALIZE

• **AMA:**
  – Balance risks of subfertility and infertility with advancing age and the increased risks of pregnancy complications with short IPI.

• **Stillbirth:**
  – Data are scant and inconclusive regarding the optimal IPI for women after a stillbirth.
  – Concern for persistent risk factors.
  – Individualize, and balance emotional health with risks of short IPI.
WHAT CAN WE DO TO INFLUENCE IPI?

• Prenatal contraceptive plan
• Postpartum birth plan

• Think about these terms...oxymorons?
PRENATAL CONTRACEPTIVE PLAN

• Contraceptive counseling during pregnancy improves postpartum contraceptive uptake

• Strong predictor of postpartum long-acting reversible contraception (LARC) use is having an antenatal plan in place

Increasing IUD and Implant Use Among Those at Risk of a Subsequent Preterm Birth: A Randomized Controlled Trial of Postpartum Contraceptive Counseling. LN Torres et al. Women’s Health Issues, 2018.
PRENATAL CONTRACEPTIVE PLAN

• Postpartum initiation of LARC
  – Effectively reduces short IPI
  – Reduces the risk of preterm birth and recurrent preterm birth

1. Postpartum contraception: initiation and effectiveness in a large universal healthcare system. Brunson et al. AJOG. 2017
PRENATAL CONTRACEPTIVE PLAN

• Postpartum initiation of LARC
  – Immediate postpartum use is most effective
• Especially relies on antepartum contraceptive counseling

1. Postpartum contraception: initiation and effectiveness in a large universal healthcare system. Brunson et al. AJOG. 2017
PRENATAL CONTRACEPTIVE PLAN

• Have the discussion before delivery
  – Make a plan and record it in the chart!

• Educate
  – LARC = most effective reversible methods
PRENATAL CONTRACEPTIVE PLAN

• What tools can help us?
  – Electronic medical record
# Prenatal Contraceptive Plan

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<th>Trimester</th>
<th>Tasks</th>
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<td>First</td>
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<td>Second</td>
<td>7</td>
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<tr>
<td>Early Third</td>
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<td>Late Third</td>
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<table>
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<td>Late 3rd Trimester Handouts</td>
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<td>10/3/2018</td>
<td>Erin A S Clark</td>
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</tbody>
</table>
PRENATAL CONTRACEPTIVE PLAN

Contraceptive Plan - Contraceptive Plan

- Method
  - IUD:
    - Female sterilization
    - Implant (Nexplanon)
    - Injectable (Depo Provera)
    - Pills- combined OCP
    - Pills- progesterone only
    - Patch
    - Vaginal ring
    - Condoms
    - Male sterilization
    - Undecided
    - Declined
    - Other

- Contraceptive plan to be initiated
  - Before hospital discharge
  - At postpartum follow-up

- Comments
  - Desires Mirena IUD at postpartum follow-up
PRENATAL CONTRACEPTIVE PLAN

• Contraceptive plan flows automatically into the admission H&P, progress notes
• Visible at the postpartum visit

*Increasing the chance that the prenatal plan becomes postnatal contraceptive reality!*
POSTPARTUM BIRTH PLAN

• Focused on those with pregnancy complications
• Discussion starts in the hospital, continues in clinic at the postpartum visit(s)
POSTPARTUM BIRTH PLAN - COMPONENTS

1. Evaluation of prior birth outcome
2. Identification of risk reduction strategies
3. Contraceptive counseling
POSTPARTUM BIRTH PLAN - COMPONENTS

1. WHAT HAPPENED?
2. WHAT CAN WE DO TO PREVENT IT FROM HAPPENING AGAIN?
3. HOW DO YOU WANT TO PLAN YOUR FAMILY?
POSTPARTUM BIRTH PLAN - COMPONENTS

1. Evaluation of prior birth outcome – diagnosis, etiology, recurrence risk
   – Example:
     • Diagnosis: 28 week spontaneous preterm birth
     • Etiology: PPROM followed by labor/abruption, no evidence of infection or cervical insufficiency
     • Recurrence risk: 30%
2. Identification of risk reduction strategies

- Example:

  - IPI of at least 18 months
  - Recommendation for Long-Acting Reversible Contraception (LARC)
  - Weight loss
  - Smoking cessation
  - Planned pregnancy, early prenatal care
  - Initiation of 17P at 16-20 weeks gestation
3. Contraceptive counseling

– Compared to women with term births, women with preterm birth are
  1. More likely
  or
  2. Less likely
to use contraception.

3. Contraceptive counseling

- Women with preterm birth are LESS likely to use contraception than women with term births

  - Pregnancy Risk Assessment Monitoring System (PRAMS) data showed women with recent extreme preterm birth were:
    - Half as likely to use contraception (31% vs. 15%)
    - Half as likely as to use highly or moderately effective methods (aOR 0.5)

3. Contraceptive counseling

- Women with preterm birth are LESS likely to use contraception than women with term births
  
  • Focus on baby
  
  • High stress, “a lot on their plate”
  
  • Lack of awareness regarding recurrence risk and effect of short IPI
  
  • Desire for another pregnancy
3. Contraceptive counseling

- Women with preterm birth are LESS likely to use contraception than women with term births
  - Less likely to receive antenatal counseling about contraception and about the importance of IPI

POSTPARTUM BIRTH PLAN

• In a very high risk group of women with history of early preterm birth attending a neonatal follow-up program...

  Nearly 1 in 5 women reported all 3:
  ✓ sexual activity
  ✓ desire to avoid pregnancy
  ✓ no current contraception use

POSTPARTUM BIRTH PLAN

• In a very high risk group of women with history of early preterm birth attending a neonatal follow-up program...

Nearly 1 in 5 women reported all 3: Reproductive hat trick for imminent unintended pregnancy risk!

3. Postpartum contraceptive counseling
   - RCT of enhanced postpartum contraceptive counseling in women with preterm birth
     - Intervention focused on promoting LARC as most effective
     - Associated with significantly increased use of LARC at 3 months postpartum (51% vs. 31%)

Increasing IUD and Implant Use Among Those at Risk of a Subsequent Preterm Birth: A Randomized Controlled Trial of Postpartum Contraceptive Counseling. Torres et al. Women’s Health Issues 2018.
POSTPARTUM BIRTH PLAN

• Counseling should ideally happen **during the birth hospitalization** – don't wait!
  – At least 1/3 of women don’t follow-up postpartum - women with more risk factors have lower rates of follow-up
  – Hospital team can most accurately assess and make recommendations
    • (Was it concerning for cervical insufficiency?)
POSTPARTUM BIRTH PLAN

• Counseling should ideally happen during the birth hospitalization
  – Offers the opportunity for contraception prior to hospital discharge
    • 40-60% of women will have unprotected intercourse prior to routine follow-up
    • Ovulation occurs at a mean of 39 days postpartum in nonlactating women (and as early as day 25)
    • Medicaid benefits may end prior to follow-up

**Best Practice Alert Triggered with ALL Preterm Births**
PRETERM BIRTH ASSESSMENT

Maternal Fetal Medicine - Preterm Birth Assessment

Patient Name: Stephanie Eardley       MRN: 20671184       Date of Birth: 10/2/1987

Preterm birth occurred at 33w1d because of preterm labor; preterm premature rupture of membranes (PPROM).

Recurrence risk is estimated to be 30%.

We recommend consultation with Maternal-Fetal Medicine physician prior to your next pregnancy as well as 18 months before considering another pregnancy. This allows time for the body to heal and reduces the risk of another preterm birth. Use of highly effective contraception (IUD or implant) is encouraged.

Contraceptive plan -
Method: IUD
Contraceptive plan to be initiated: At postpartum follow-up

Additional recommendations include: 17P beginning by 16 weeks in next pregnancy; cervical length assessment in the mid-trimester of next pregnancy.

Erin A. S. Clark, MD
10/10/2018
12:12 AM
POSTPARTUM BIRTH PLAN

• Counseling should be repeated as an outpatient
  – Poor retention of initial counseling information
  – Another opportunity for contraception
  – Consider repeating again before they decide to get pregnant (recommendations may change!)
TAKE HOME POINTS

• Interpregnancy interval less <6 months is associated with the highest risk of pregnancy complications, including PTB
  – Risk is significant if adverse outcome in preceding pregnancy

• Optimal interpregnancy interval is >18 months and <5 years
TAKE HOME POINTS

• Prenatal contraceptive plan increases postpartum contraception uptake and LARC uptake

• Postpartum birth plan that includes evidence-based risk reduction strategies and contraceptive counseling may reduce short IPI and the risk of future pregnancy complications
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