Understanding Postpartum Depression
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Overview of Talk

- Epidemiology of MDD & PPD
- Barriers to Screening
- How to Screen
- Pre-term Infants and Maternal Risk of PPD
- Current Theories of the Pathogenesis of PPD
- Treatment of Perinatal Depression

Perinatal depression is very real and treatable.

Mood Disorders in Women in the General Population

- Depressive disorders are very common
- Lifetime prevalence rates range from 4.9-17.1 percent
- Women report a history of major depression at nearly twice the rate of men
- Depression is now considered the leading cause of disease-related disability among women in the world.
- Women of childbearing age are at high risk for major depression

DSM-IV Criteria for Major Depression

Five (or more) of 9 symptoms:

- Depressed mood
- Loss of interest or pleasure in almost all activities
- Significant weight loss or weight gain
- Insomnia or hypersomnia
- Restlessness or feeling slowed down
- Fatigue
- Worthlessness or inappropriate guilt
- Inability to concentrate
- Suicidal ideation

DSM-IV Criteria for Major Depression (MDD)

- Must be present during the same 2-week period
- Represents a change from previous functioning
  - At least one of the symptoms is either
    - (1) depressed mood or
    - (2) loss of interest or pleasure

Background: Perinatal Depression

- **COMMON**
  - **10-15% prevalence**
  - 4 million women give birth annually in U.S.; ½ million with PPD
  - Most common, unrecognized complication of perinatal period
    - Compare to prevalence rate of gestational diabetes at 2-5%
- **MORBID**
  - Devastating consequences for patient and family
    - low maternal weight gain, preterm birth
    - Impaired bonding between mother and infant
    - Increased risk of suicide and infanticide
- **MISSED**
  - No practice guidelines or routine screening
  - Symptoms often different from "classic DSM-IV depression"

Gavin et al, Ob & Gyn 2005; Gaynes et al. AHRQ Systematic Review 2005

Adverse Fetal Outcomes Associated with Depression During Pregnancy

- Adverse outcomes have been documented in women with depression during pregnancy
- New cohort study demonstrates that the rate of depression per 1000 deliveries increased significantly from 2.73 in 1998 to 14.1 in 2005, ($p<0.001$).
- New cohort study shows that depressed women were significantly more likely to have:
  - cesarean delivery, preterm labor, anemia, diabetes, and preeclampsia or hypertension compared with women without depression.
  - Worse fetal outcomes included fetal growth restriction, fetal abnormalities, fetal distress & death.
    - Bansil et al, 2010 J Women's Health

Perinatal Mood Disorders: Etiology

- Caused primarily by hormonal changes
- Life stressors, such as moving, illness, poor partner support, financial problems, and social isolation can negatively affect the woman's mental state
- Strong emotional, social, and physical support can greatly facilitate her recovery

Distinguishing Characteristics of Mood Symptoms in the Perinatal Period

- Anxiety or agitation
- Depressed mood
- Sadness, weepiness
- Irritability
- Lack of interest in the newborn
- Impaired concentration or feeling overwhelmed
- Feelings of dependency

Causes of Perinatal Mood Symptoms

"Giving birth is like taking your lower lip and forcing it over your head." --Carol Burnett

- Rapid hormonal changes
- Physical and emotional stress of birthing
- Physical discomforts
- Emotional letdown after pregnancy and/or birth
- Awareness and anxiety about increased responsibility
- Fatigue and sleep deprivation
- Disappointments including the birth, spousal support, nursing, and the baby

Perinatal Psychiatric Disorders

- Depression During Pregnancy
- Postpartum Blues
  (Not considered a disorder)
- Postpartum Depression
- Postpartum Psychosis
- Bipolar Disorder
- Anxiety Disorders
  (OCD, Panic Disorder, PTSD)

Risks factors associated with PPD

- Depression or anxiety during pregnancy
- Personal or family history of depression/anxiety
- Abrupt weaning
- Social isolation or poor support
- Child-care related stressors
- Stressful life events
- Mood changes while taking birth control pill or fertility medication, such as Clomid
- Thyroid dysfunction
- **50 to 80%** risk if previous episode of PPD

Postpartum Psychosis

Postpartum Psychosis

- A rare condition, with an estimated prevalence of 0.1%-0.2% (one to two per thousand)
  - However, in women with Bipolar Disorder, the risk is 100 times higher at 10% - 20%
  - It is a **psychiatric emergency** & requires immediate treatment with a mood stabilizer & antipsychotic
- Onset usually 2-3 days postpartum
- Has a 5 % suicide & 4 % infanticide rate
- Risk for recurrent episode with a subsequent pregnancy is 90%

ACOG Makes PPD a Priority

- In May 2009, new ACOG President, Dr. Gerard Joseph announces that PPD is going to be the major focus during his tenure.
- "While in an ideal world, the newly delivered mother is at the peak of her reproductive health, with a beautiful child and, ideally, a supportive, loving family, this unfortunately is not always the case. "Studies show that this is a most vulnerable time for our patients, especially those prone to depression or those with a history of depression. Complicating matters is that the new mother often can't bring herself to admit to any problems or negative emotions due to societal pressures. Instead of asking for help, she may feel guilty for not being 'grateful' or a 'good' mother."
  - Dr. Gerard Joseph, ACOG Annual Meeting, May 2009

Depression During Pregnancy: Treatment Recommendations

A Joint Report from APA and ACOG

- Report published in *Obstetrics & Gynecology* (September 2009) & *General Hospital Psychiatry* (September/October 2009). (Yonkers K, et al)

- Bridges the gap by summarizing current research on various depression treatment methods and assists clinicians in decision-making

Screening for PPD By Pediatricians

- Pediatricians have greater awareness of the negative consequences for mother and child.
- Most studies demonstrate that pediatricians do not feel responsible for recognizing postpartum depression.
- Barriers to screening identified by pediatricians
  - Insufficient time for adequate history taking
  - Insufficient training or knowledge to diagnose, counsel or treat
  - Maternal reluctance to discuss with Pediatrician
  - Pediatrician reluctance to discuss mental health issue
  - Lack of mental health resources for referral

Frequency of HealthCare Provider Contact in 1st year Postpartum

- 1 visit to Ob-Gyn at 6-week postpartum visit
- 5-7 visits to Pediatrician in the first year after giving birth
- Maternal encounters with Pediatrician are > than with OB-GYN
- Pediatricians play a critical role in:
  - Detection
  - Evaluation
  - Referral
  - Follow-up of PPD

Barriers to Diagnosis & Treatment

Pregnant Pause
May 2009
Vogue Article Slams
Antidepressants During Pregnancy

Screening Instruments

- Edinburgh Postnatal Depression Scale (EPDS)
  - Most commonly employed screening tool for PPD
  - 10 questions self-rated instrument
  - Validated and developed specifically to identify women experiencing postnatal depression
  - English and Spanish versions

Edinburgh Postnatal Depression Scale (EPDS)[1,2]

Ask patient how they have been feeling OVER THE LAST 7 DAYS, not just today

To use calculator, click on appropriate answer and score appears in box when all questions completed

1. I have been able to laugh and see the funny side of things

2. I have looked forward with enjoyment to things

3. I have blamed myself unnecessarily when things went wrong

4. I have been anxious or worried for no good reason

5. I have felt scared or panicky for no very good reason

6. Things have been getting on top of me

7. I have been so unhappy, I have had difficulty sleeping

8. I have felt sad and miserable

9. I have been so unhappy that I have been crying

10. The thought of harming myself has occurred to me

3 points - Yes, quite often
2 point - Sometimes
1 point - Hardly ever
0 points - Never

Edinburgh Postnatal Depression Score = /30

Implementing EPDS in OB-GYN and Pediatric Settings

- OB-GYN settings are more likely to implement screening compared to Peds
- In many studies, up to 27% of women had a positive screen at some point during the perinatal period.
- Increased screening leads to increased diagnosis of maternal depression
- Increased rates of mental health referral
- SCREENING IS FEASIBLE and PPD is TREATABLE!
  - Chaudron et al, 2004

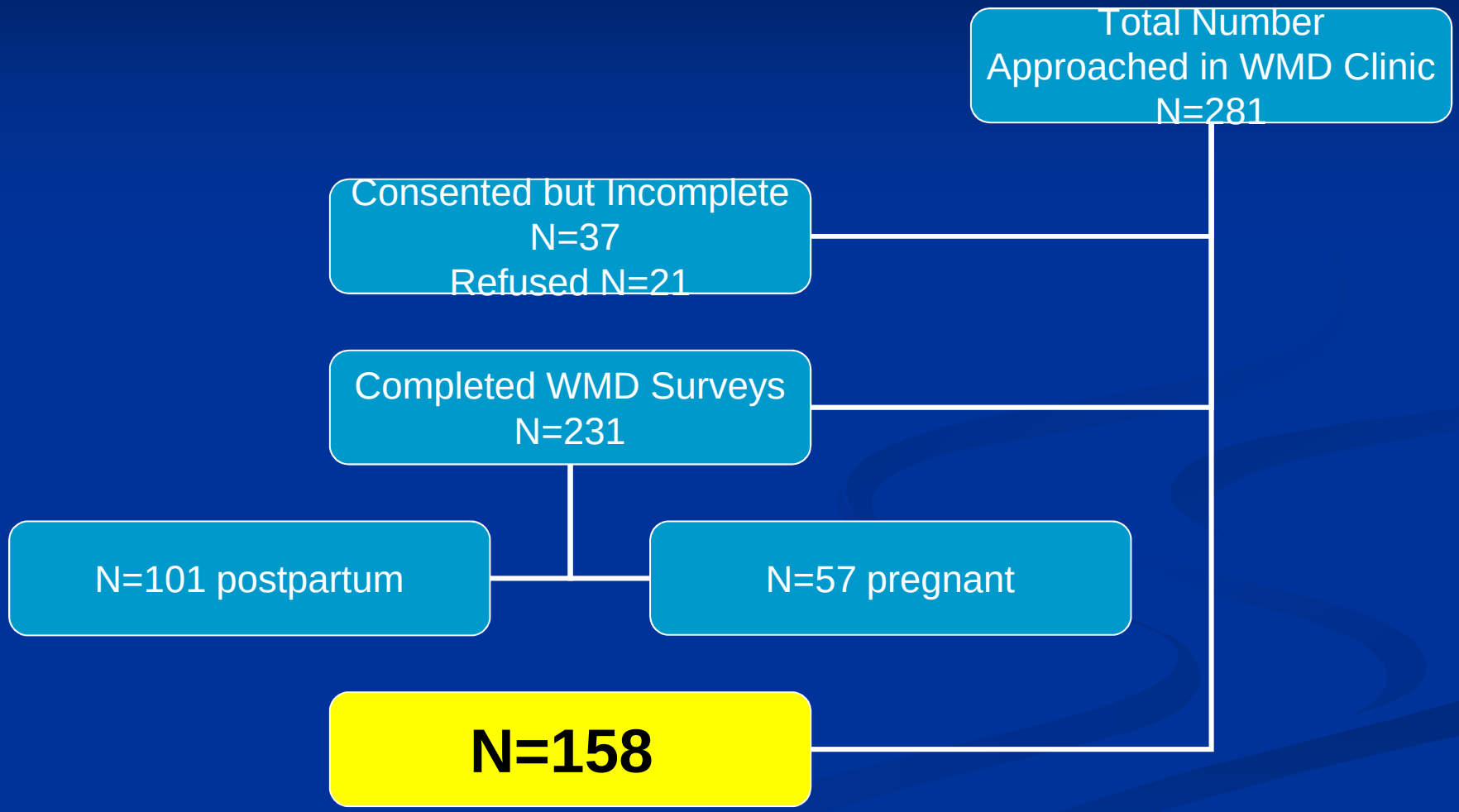
Factors Associated with Screening in Pediatric Settings

- Age (older pediatricians)
- Practices provide child mental health services
- Race of patient population (>75% white)
- Use multiple methods for identification of maternal depression
  - Observation is inadequate!!
- Believe that PPD is adverse effect on child
- Inclined to treat depression (96% refer)
    - Heneghan et al, 2007

Pathogenesis of Unique Symptoms in PPD is Unknown

- Research questionnaire given to patients presenting to the UNC Women's Mood Disorders Program
- Survey focused on psychiatric comorbidity and prior stress related-events in women with perinatal depression
- Planned preliminary analysis of patients presenting with PPD
- Used validated measures for psychiatric illness
  - State/Trait Anxiety Inventory
  - Patient Health Questionnaire
  - Edinburgh Postnatal Depression Scale
  - SPAN Post Traumatic Stress Disorder Scale
  - Trauma Inventory

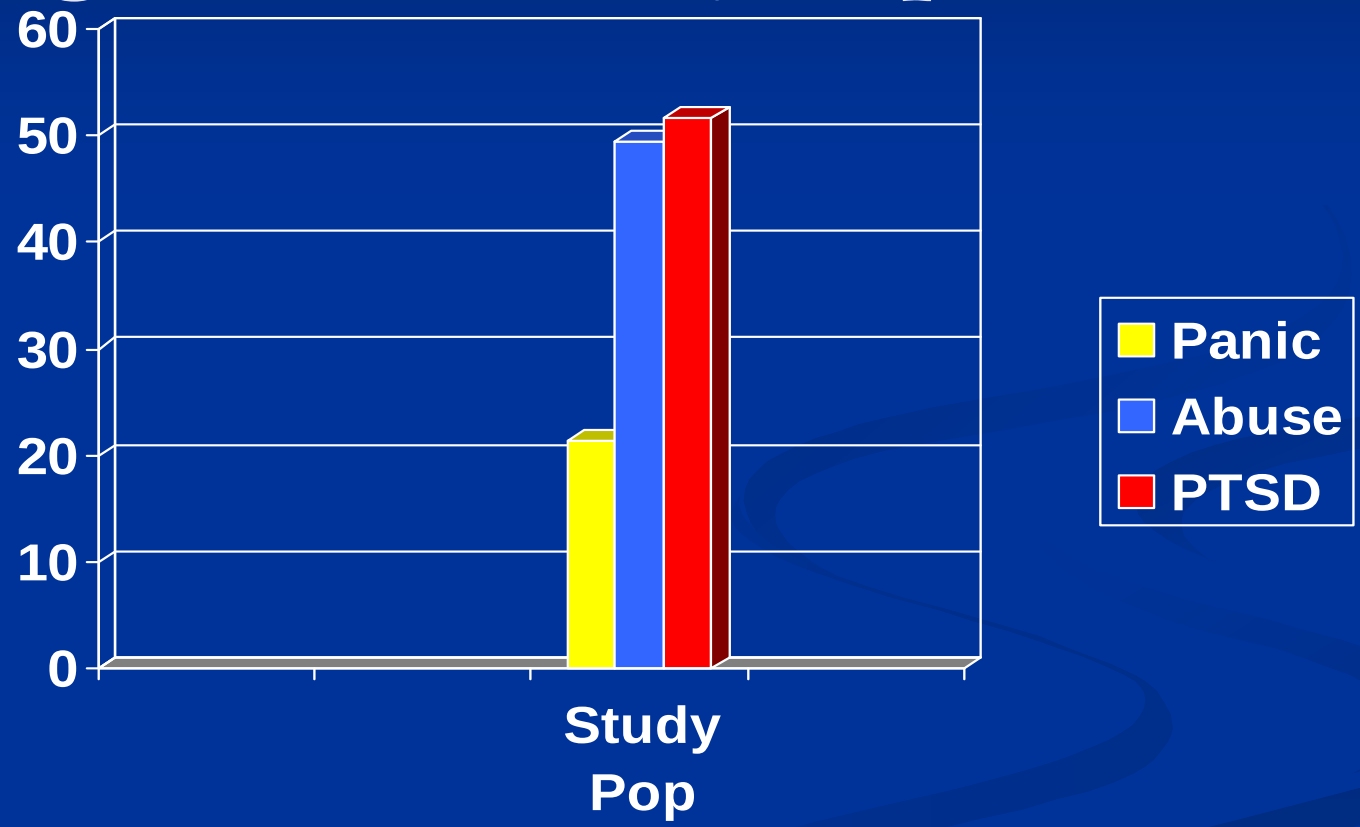
Recruitment of Study Sample



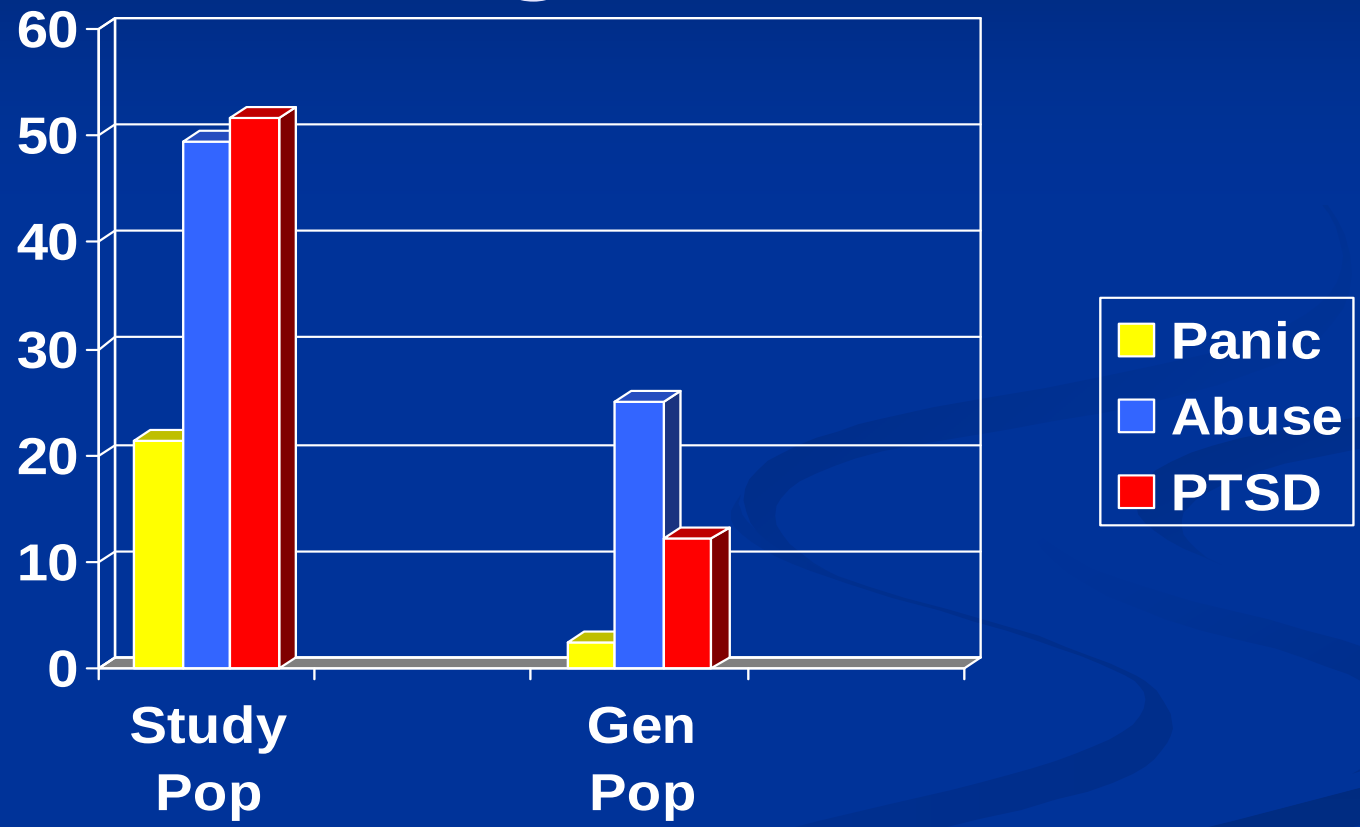
Results: Demographics

Sample Size	N=158
Mean Age (years)	30
Mean Education (years)	15.2
Edinburgh Postnatal Depression Score	14 (>12 is positive)
PHQ Depression Score	10.3 (>10 is positive for moderate to severe)

Results: Comorbid Psychiatric Diagnoses in Study Population



Rates of Comorbid Psychiatric Diagnoses

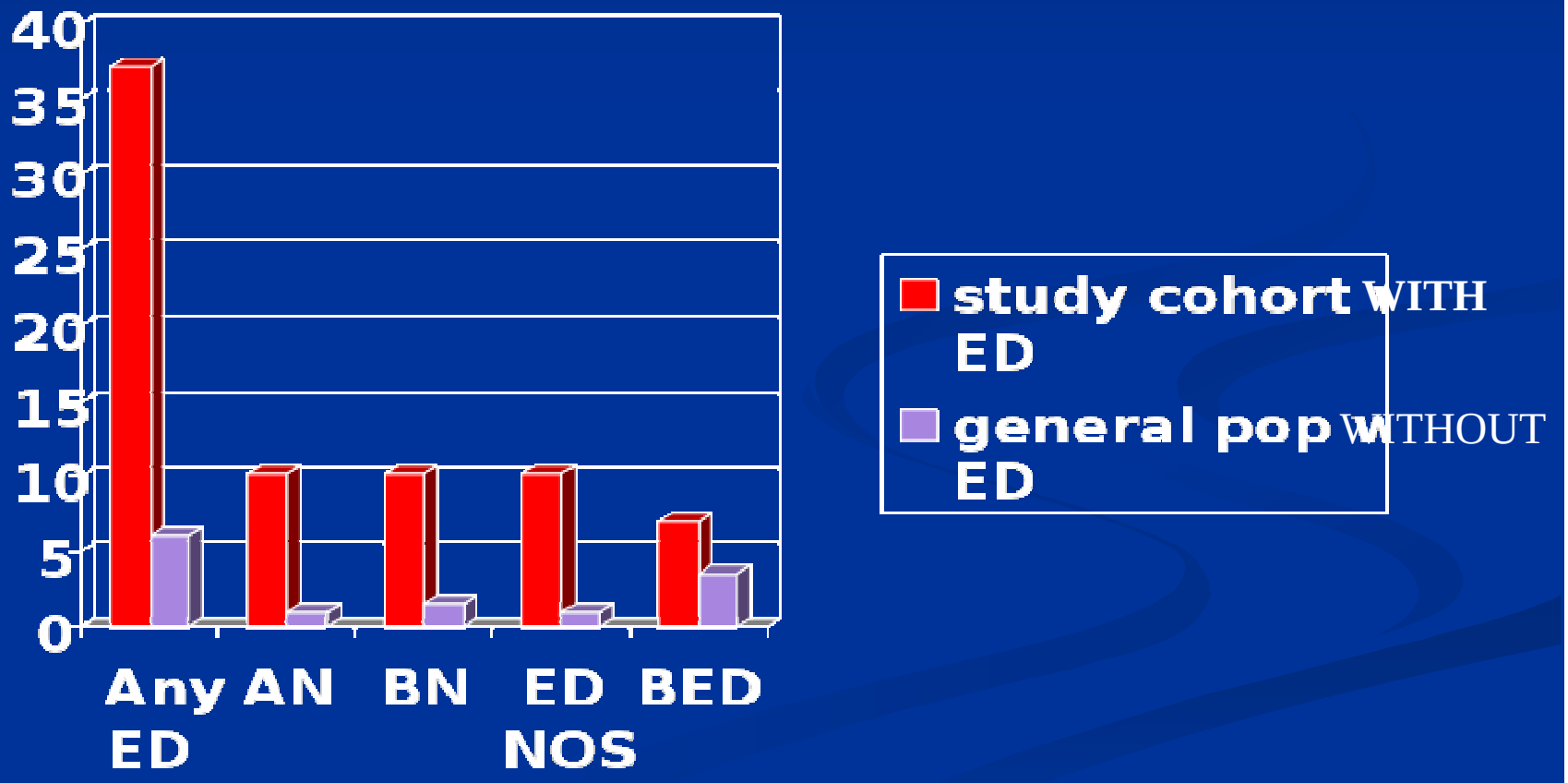


Eating Disorders Assessment in the Survey Study

- Diagnostic algorithms & hierarchies were constructed to determine the lifetime history of eating disorders

- The hierarchy was as follows:
  - **AN**: all AN criteria except amenorrhea
  - **BN**: binge eating and either purging (vomiting or laxatives) or nonpurging (exercise or fasting)
  - **EDNOS-P**: (no AN or BN) and endorse purging without binge eating
  - **BED**: (no AN or BN) and endorsed binge eating without compensatory behaviors.

Comparison of ED Prevalence in Perinatal Clinic versus General Population



PPD Depression and Lactation Failure

- Postpartum American mothers are on their own during a challenging time:
  - recover from childbirth
  - navigate of infant feeding and attachment
  - experience complex neuroendocrine transition from the hormonal milieu of pregnancy to lactation.

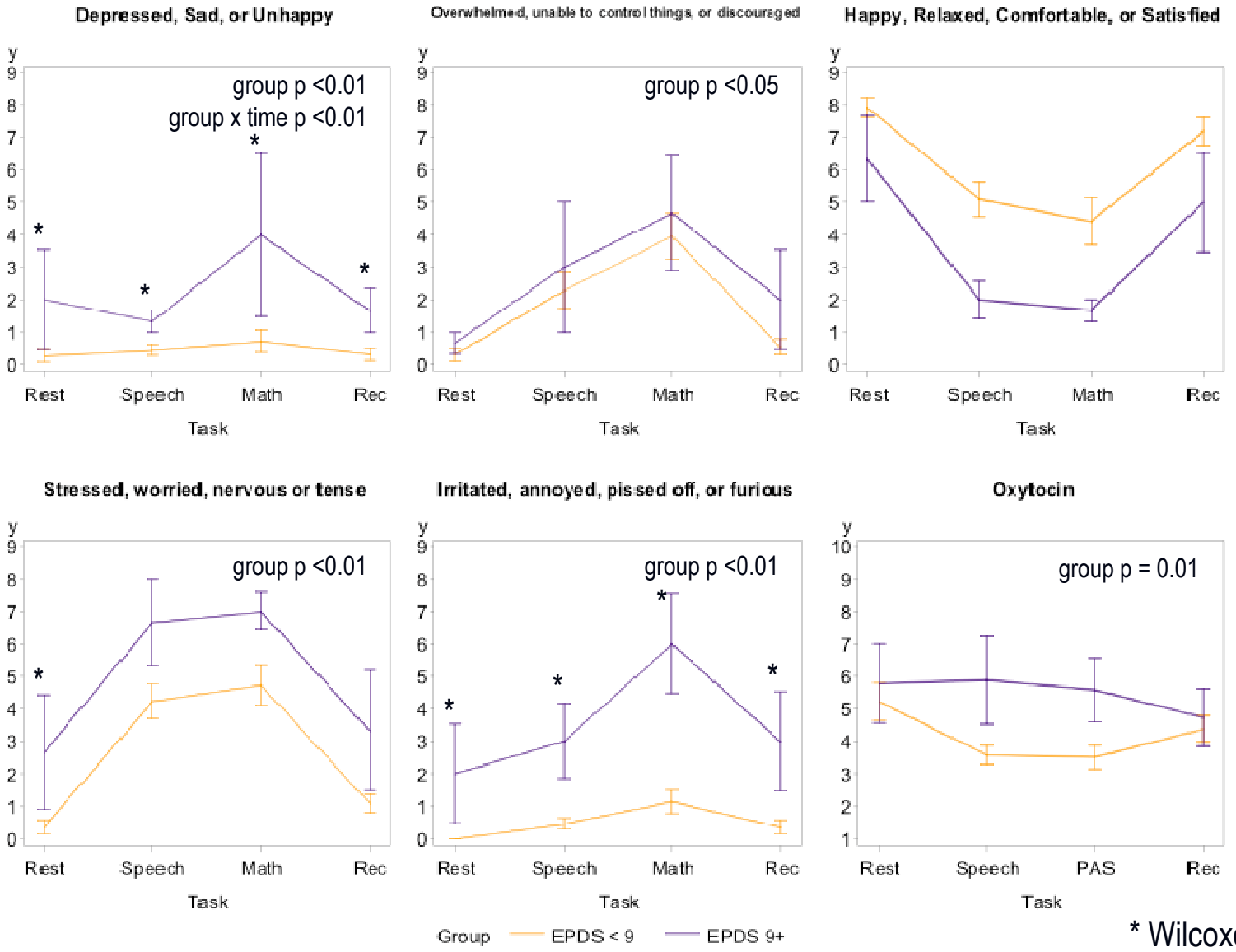
- In the clinical setting, these challenges manifest as PPD and lactation failure, two problems with tremendous public health consequences.

PPD and Lactation Failure: Specific Aims

- **PPD and lactation failure may share a common pathogenesis that involves alterations in neuroendocrine function**
  - HPA stress axis (CRH and cortisol), gonadal steroids (estradiol and progesterone), thyroid (TSH & free T4), oxytocin and prolactin, and the autonomic nervous system.

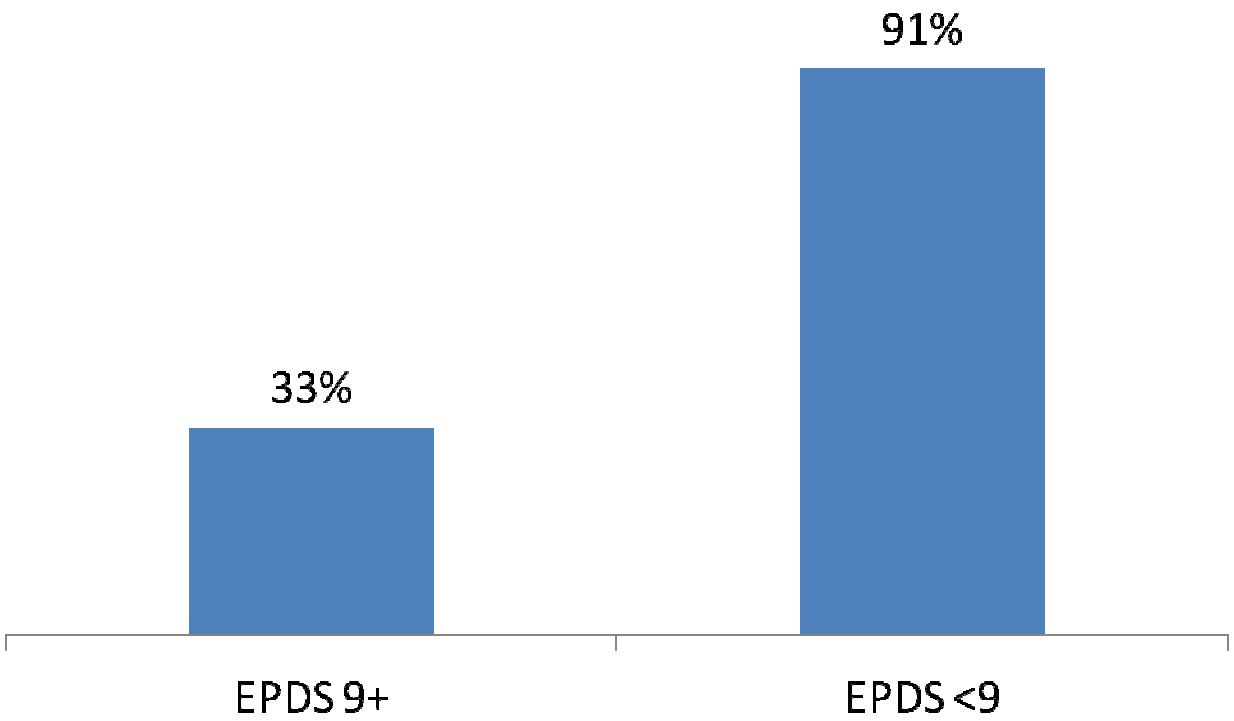
- **<u>Specific Aims:</u>**
  - **Aim 1** To determine the association between lactation status and PPD as measured at 2 time-points, 1-2 weeks and 6-8 weeks postpartum.
  - **Aim 2** To measure neuroendocrine hormonal profiles (estrogen, progesterone, thyroid, oxytocin and prolactin, CRH, ACTH, cortisol) *during a feeding episode*, comparing women with and without PPD and women who are successfully breastfeeding or have prematurely weaned, at 2 time-points, 1-2 weeks and 6-8 weeks postpartum.

Current depression and response to the TSST



* Wilcoxon p < 0.05

Any breastfeeding at 8 weeks



Fisher's Exact p = 0.06

UNC OB-GYN PPD Algorithm

- Posted on the Mombaby.org website
- Look Under Algorithms
  - Edinburgh (English)
  - Edinburgh (Spanish)
  - Edinburgh Triage Algorithm
    - See handout of algorithm

Preterm Infants and Maternal Risk of PPD

- Higher rates of anxiety and depression (prevalence rate of depression of at least 50%), during the first 6 months postpartum
- Risk factors in this population:
  - mother's past psychiatric history
  - previous perinatal loss
  - psychosocial support including marital status
  - severity of the infant's health status
  - degree of worry and coping skills in the mother
  - rehospitalization after the initial stay
    - (Miles et al, 2007; Garel et al, 2004; Mew et al, 2003)

Increased Psychiatric Comorbidity After Preterm Birth

- Correlation between PTSD symptoms and preterm delivery
- Increased PTSD symptoms in women who have had a "traumatic" birth experience.
- PTSD and depression are often comorbid
- Integrated care is needed between obstetricals mental health, and neonatology/pediatrics
- "Will allow for the development of innovative assessment and treatment strategies to help the mother-infant dyad throughout the difficult first year and beyond after a preterm delivery".
  - (Holditch-Davis et al, 2003; Rogal et al, 2007),

Etiology of PPD

- Change in level of gonadal steroids
- Interaction of gonadal steroids with other neurotransmitter systems
- Dysregulation of HPA axis
- Genetic vulnerability

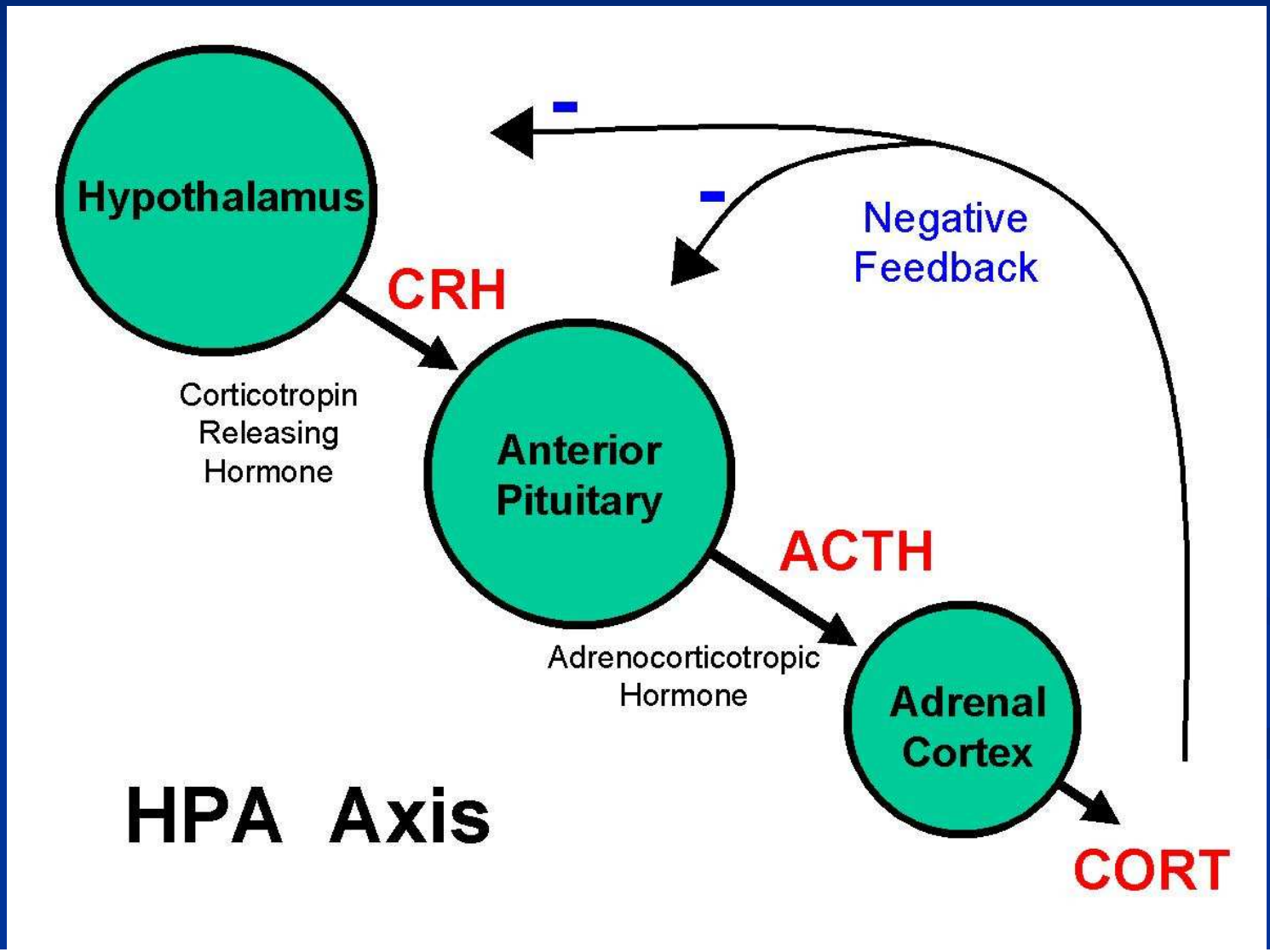
Neurobiologic Effects of Estrogen and Progesterone

- Both estrogen and, progesterone affect neurons in the opioid, norepinephrine, serotonin, dopamine and GABA systems
- Receptors for estrogen and progesterone have been identified in multiple areas of the CNS including amygdala, hippocampus, cingulate gyrus, locus coeruleus and central gray matter

Pathogenesis of PPD: Working Hypotheses

- Abnormalities in HPA axis activity are associated with reproductive-endocrine related mood disorders, particularly during the transition from childbirth to the immediate postpartum period

HPA Axis

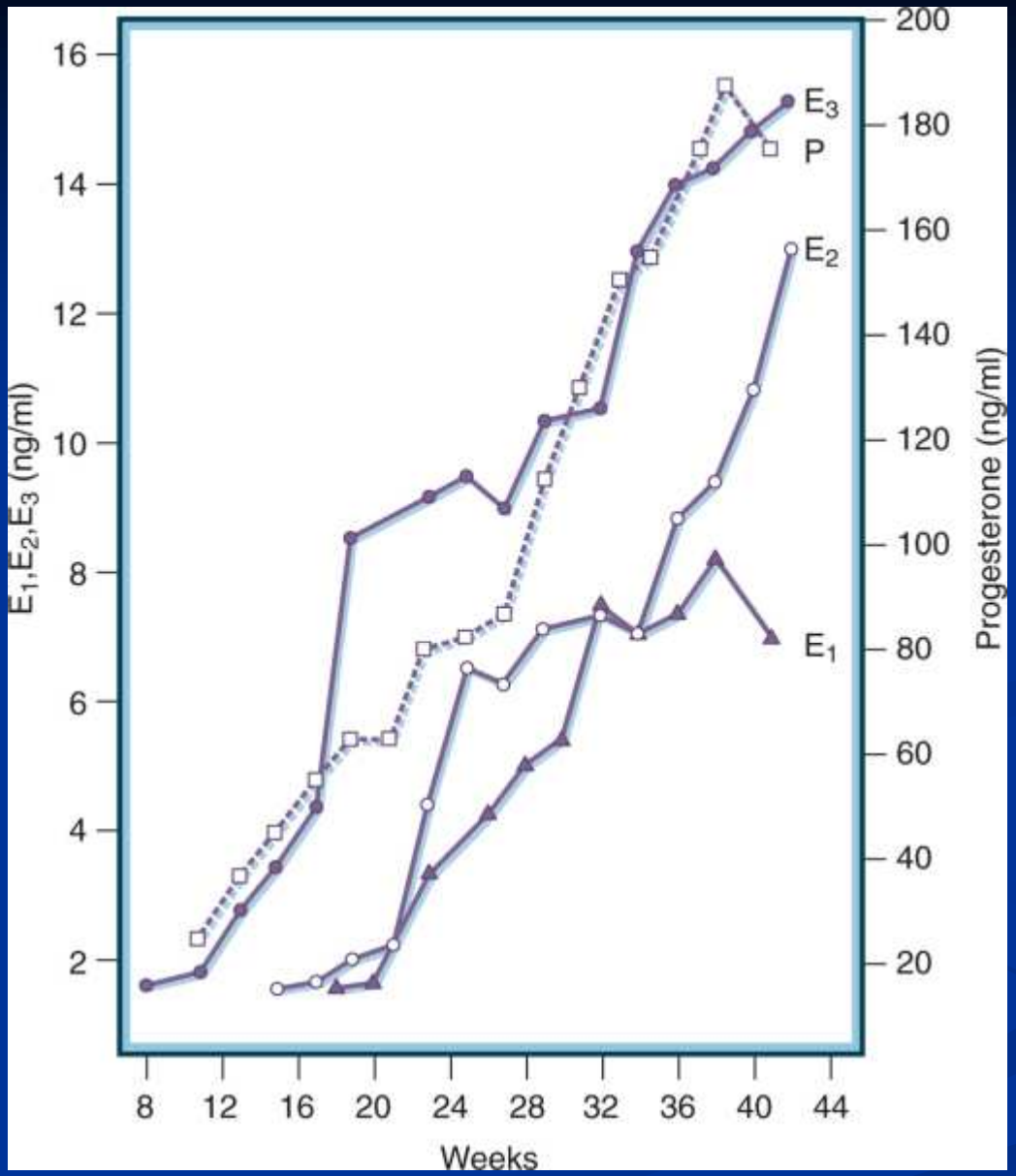

Hypothalamus
CRH
Corticotropin
Releasing
Hormone
Anterior
Pituitary
ACTH
Adrenocorticotropic
Hormone
Adrenal
Cortex
CORT
Negative
Feedback
HPA Axis

Abnormal HPA changes in women with Depression

- Dysregulation of the HPA axis may represent a critical maladaptation and vulnerability to the onset of reproductive steroid related depression
- A hallmark feature of the HPA axis in MDD is altered response to stress and inability to maintain regulation
- Hyperactivity of the HPA axis is one of the most robust biological findings in MDD
- Activity of the HPA axis is often evaluated by the dexamethasone suppression test (DST)
  - a positive (abnormal) DST is characterized by diminished or absent suppression of cortisol, resulting in hyperactivity of the HPA axis

Normal changes in the HPA axis during pregnancy and into the postpartum period

- The third trimester of pregnancy is characterized by high estrogen and progesterone levels and a hyperactive HPA axis with high plasma cortisol
- At childbirth and during the transition to the postpartum period the following occur:
  - estrogen and progesterone rapidly decline
  - there is blunted HPA axis activity due to suppressed hypothalamic CRH secretion



Mean plasma concentrations of estrone (E1), estradiol (E2), estriol (E3), and progesterone (P) during pregnancy. *(Data from Tulchinsky D, et al 1972; Levitz M et al 1977;35:109.)*

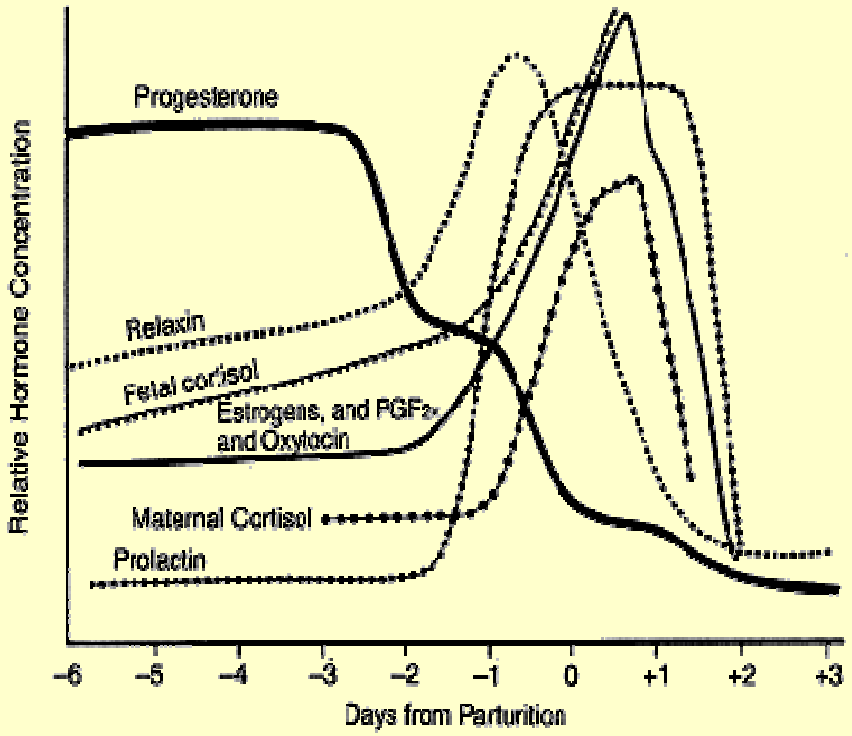
HPA Axis and Impact on Fetus Normal Development

- Increased fetal cortisol contributes to the maturation of organ systems required for postnatal extra-uterine survival (Challis et al, 2001).
- Fetal endocrine maturation is characterized by enhanced activity of the fetal hypothalamic-pituitary-adrenal (HPA) axis during late gestation.
- Precocious activation of this axis may occur when the fetus is exposed to an adverse intra-uterine environment such as:
  - Hypoxemia.
  - Disruption of early embryonic environment
  - This environment may have a significant role to play in determining the timing and level of the prepartum activation of the HPA axis and on the functional capacity of the axis to respond to stress in later life (McMillen et al, 2004).

HPA Axis and Impact on Fetus Abnormal Stress

- Prenatal stress and exogenous glucocorticoid manipulation also lead to the modification of behaviour, brain and organ morphology, as well as altered regulation of other endocrine systems
- Excessive levels of feto-placental glucocorticoid, derived from maternal administration of synthetic corticosteroids or sustained endogenous fetal cortisol production, results in intrauterine growth restriction
- Primary area of research at the Emory Women's Mental Health Program (Drs. Stowe and Newport)

Profound Neuroendocrine Changes at Time of Birth



Treatment

Treatment of PPD

- Critical for the well being of the woman, baby and family
- Effective treatments are readily available
- Skilled assessment and treatment by mental health professionals in perinatal psychiatry makes a difference in outcomes !!

Issues Related to Treatment of Perinatal Depression

- Treatment must include both psychological and/or biological interventions and meet the needs of the population
  - Psychotherapy (individual and/or group)
  - Increased social supports
  - Exercise, good nutrition, adequate sleep
  - Antidepressant medications if appropriate
  - Careful monitoring

Risk of Relapse of Major Depression in Pregnancy

- High risk of depressive relapse following antidepressant discontinuation during pregnancy (Cohen et al, JAMA, 2006).
  - Of 201 women in the sample, 86 (43%) experienced a relapse of major depression during pregnancy.
  - Women who discontinued medication relapsed significantly more frequently (68% vs 26%) compared with women who maintained their medication (hazard ratio, 5.0; 95% confidence interval, 2.8-9.1; P<.001).
    - Pregnancy is not "protective" with respect to risk of relapse of major depression

Risks of Untreated Antenatal Depresion

- Associated with low maternal weight gain, increased rates of preterm birth, low birth weight, increased rates of cigarette, alcohol and other substance use,
- Increased ambivalence about the pregnancy and overall worse health status.
- Prenatal exposure to maternal stress has been shown to have consequences for the development of infant temperament.
- Children exposed to perinatal maternal depression have higher cortisol levels than infants of mothers who were not depressed, and this continues through adolescence.
- Maternal treatment of depression during pregnancy appears to help normalize infant cortisol levels.

Collaborators at UNC

- David Rubinow, MD
  - Chairman of Psychiatry and Director of WMD Program
- John Thorp, MD
  - Professor and Division Head, UNC Ob-GYN
- Alison Stuebe, MD
  - Assistant Professor, UNC Dept of Ob-GYN
- Sarah Elizabeth Bledsoe, PhD
  - UNC School of Social Work
- Christena Raines, NP
  - Perinatal Psychiatric Nurse Practitioner
- Elizabeth Bullard, MD
  - Medical Director, Inpatient Psychiatry Program

UNC Center for Women's Mood Disorders:

Perinatal Psychiatry Program

Clinical and Research Program that provides assessment, treatment and support for women in the perinatal period

Collaboration of doctors, nurses, midwives, therapists, & social workers

www.womensmooddisorders.org

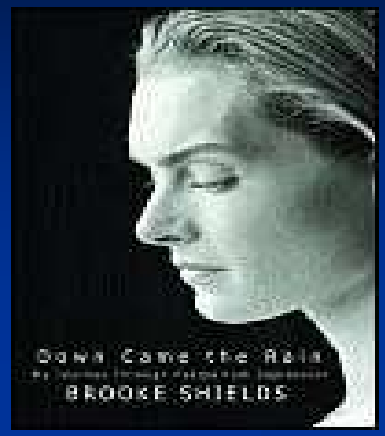
UNC Center for Women's Mood Disorders:
Perinatal Psychiatry Inpatient Unit

- Newest addition to the UNC Perinatal Psychiatry Program
- 1st Perinatal Inpatient Unit in the US
- Provides specialized comprehensive assessment and treatment
  - medication stabilization
  - individual and group counseling and behavioral therapy
  - art therapy, relaxation, spirituality, biofeedback, exercise, psycho-education for both patients and spouses
  - family therapy

Comfort Measures

- Protected sleep times
- Dedicated semi-private rooms and group room
- Gliders and supplies for pumping/nursing
- Pumps, supplies, and refrigerator for milk storage
- Specialty perinatal nursing staff
- Extended visiting hours to maximize positive mother-baby interaction

Patient Resources



- Postpartum Support International

  www.postpartum.net

- "Down Came the Rain" by Brooke Shields

- "This Isn't What I Expected: Overcoming Postpartum Depression by Karen Kleiman & Valerie Raskin

- "Beyond the Blues" by Bennett & Indman