

Pregnancy Risk Assessment and Management

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Goals

- Define different perinatal risk categories and strategies on how to manage and transition these patients to a different level of care depending on support services available
- Review case scenarios of high vs. moderate risk situations and their possible management



Prenatal Care

- The American Academy of Pediatrics and the American College of Obstetricians and Gynecologists have defined prenatal care as: "A comprehensive antepartum care program that involves a coordinated approach to medical care and psychological support that optimally begins before conception and extends throughout the antepartum period."

Regional System of Perinatal Care

- Requires strategies to:
 - Improve access to services
 - Identify risks early
 - Provide linkage to the appropriate level of care
 - Ensure compliance, continuity, and comprehensiveness

Barriers to delivery of perinatal care

- Financial
- Lack of access to comprehensive perinatal services
- Cultural
- Public education about reproductive health and need for early entry to care

Epidemiology

- In 2001, there were 50 million prenatal visits with an average of 12.3 visits per pregnancy
- 83% began prenatal care during the first trimester
- However, there are still disparities within the minority groups and between countries

The goal of prenatal care is to prevent maternal and/or perinatal morbidity and mortality.

So how good are we doing?

Infant Mortality Rates Around the World

Countries and regions with the highest and lowest infant mortality rates (2009 and CIA Fact book) are shown below

Rank	Country region	Infant mortality rate (deaths/1,000 live births)
1	Angola	187.49
2	Afghanistan	163.07
3	Sierra Leone	162.55
4	Liberia	161.99
5	Mozambique	130.79
...
184	United States of America	6.50 (White: 6, African American: 14)
223	Japan	3.26
224	Hong Kong, SAR, PRC	2.96
225	Sweden	2.77
226	Singapore	2.29

U.S. Infant Mortality Rates

- Infant mortality rates dropped from 9.2 to 6.8 per 1,000 live births from 1990-2001
- Maternal mortality rates have declined from 850 per 100,000 live births in 1900 to 50 in 1955 and currently stands at 8 per 100,000 live births

What about North Carolina infant mortality?

North Carolina Statistics 2003-2007

- Total infant deaths per 1,000 live births
 - 8.4/1000 overall
 - 15.2/1000 african-american, non-hispanic
 - 12.0/1000 american indian
 - 6.5/1000 hispanic
 - 6.1/1000 white, non-hispanic

North Carolina Statistics 2003-2007

- Percentage Low Birth Rate (<2500 grams)
 - Overall rate was 9% of total live births
- Race/ Ethnic Breakdown of Low Birth Rate Live Births
 - 14.4% African-American, Non-Hispanic
 - 10.9% American-Indian
 - 7.8% White, Non-Hispanic
 - 6.3% Hispanic

What can be done to help improve these statistics?

Comprehensive Perinatal Health Care Services

- Goals
 - Integration and timely access to care at the appropriate level for the entire population
 - Early and ongoing risk assessment to prevent, recognize, and treat conditions associated with maternal and infant morbidity and mortality
 - Improve referral and consultation among institutions and providers that provide different levels of care

What are some specific maternal and fetal conditions which can negatively affect maternal and/or fetal status?

Very High Risk

- Anemia (hematocrit < 25% or hemoglobin < 8 gm/dl)
- Chronic Hypertension, on medications
- Chronic Renal Disease
- Diabetes, requiring insulin
- Fetal anomaly
- Fetal Growth Restriction($\leq 10\%$)
- Heart Disease, NYHA class III or IV

Very High Risk

- Hemoglobinopathy (sickle cell disease, thalassemia, etc.)
- HIV infection/AIDS
- Hyperemesis gravidarum
- Hyperthyroidism
- Incompetent Cervix
- Isoimmunization
- Lupus

Very High Risk

- Multiple Gestation
- Oligohydramnios or Polyhydramnios
- Placenta Previa (persistent after 20 weeks)
- Preeclampsia
- Preterm Labor
- Thrombosis/Embolism

Very High Risk

- Prior Classical Cesarean Section or Myomectomy
- Organ Transplant
- Current or past malignancy
- Other severe high risk medical condition

Moderate High Risk

- Adolescent Pregnancy (< 14 years old)
- Cervical Dysplasia
- Chronic hypertension not on meds
- Diabetes, diet controlled
- Fetal macrosomia
- Heart Disease, NYHA class I and II
- Herpes

Moderate High Risk

- History of intrauterine fetal demise (>15 weeks)
- History of prior preterm birth (<36 weeks)
- Pyelonephritis
- Inappropriate weight gain/loss
- Mental health disorders on medication
- Substance abuse, or on chronic methadone therapy

Moderate High Risk

- Prior Cesarean Section
- Fetal Malpresentation (> 35 weeks)
- Other moderately high risk medical condition

Do all moderate and high risk conditions need referral ?

Ongoing Risk Assessment and Management

Although a correlation can be seen between antepartum risk factors and the development of problems, a significant percentage of intrapartum and neonatal problems occur among patients without known risk factors.

Management Strategies

- Referral to obstetrician or perinatologist
- Consultation and co-management with obstetrician or family physician
- Consultation only with perinatologist, geneticist, pediatrician, anesthesiologist, or other medical specialist in the evaluation, counseling, and care of the patient

Requirements for managing moderate risk patients

- Providers experienced and comfortable with managing these medical conditions (i.e. midwives, PA's, NP's)
- Clear written guidelines, collaborative agreements, protocols, etc. with supervising physician
- Resources to properly evaluation
 - Lab, antepartum testing and ultrasound availability
 - A nurse who can follow up and coordinate with patients and ancillary testing sites

Let's go over some examples of specific patient risk assessment case management.

Case #1

Case #1

J.J. is a 30 year old Gravida 3, Para 1102. She presents for her first prenatal visit at 12 weeks gestation. Her obstetric history is significant for one full term delivery and one 33 week delivery after a motor vehicle accident. Both children are healthy. She is not having any problems today.

Case #1

- Is this patient high, moderate or low risk?
- Is she a candidate for 17-P injections (17-Hydroxy Progesterone)?
- What is the next step in her care?
 - Referral , consultation, or continuity of care at local health department?

Case #1

- This patient is moderate risk
- Next step should be to obtain the actual records from her delivery to review.
- If diagnosis was preterm delivery secondary to “placental abruption” after trauma (i.e. MVA) the likelihood of this event repeating itself is unlikely.

Case #1 continued

- Weekly 17-OH Progesterone injections is only indicated for “UNEXPLAINED “ spontaneous preterm birth.
- High risk referral not needed at this time.

17-OH Progesterone and Preterm Birth

- Preterm delivery is the leading cause of neonatal mortality in the U.S.
- Defined as birth < 37 weeks gestation (12% of all U.S. Births).
- In women at high risk of preterm birth (those with one or more prior *spontaneous* preterm births) weekly progesterone injections between 16-36 weeks gestation has been shown in randomized studies to reduce the incidence of preterm delivery.

New England Journal study results 2003

Table 1. Rates of Preterm Labor With Progesterone Therapy or Placebo

Gestations	Placebo Group (n = 152)	Progesterone Group (n = 205)	Relative Risk	Confidence Interval	P
Less than 27 weeks	54.0%	36.3%	1.66	0.94-4.01	.001
Less than 35 weeks	39.7%	20.6%	1.67	0.86-3.03	<.005
Less than 37 weeks	13.6%	11.4%	0.98	0.71-1.31	.9188

Shaw DM, Blasi PJ, Cassamat M, Pineda E, Beresford MP, Stanik A, et al. Prevention of recurrent preterm delivery by 17 beta-hydroxyprogesterone caproate. *N Engl J Med* 2003;349:1713-21

Case #2

Case #2

M.J.- 24 y/o G3P2002 at 28 weeks gestation, presents for her routine prenatal visit with a "flat affect". She is given depression screening questionnaire by nurse. Screened yes for #10 with total score 18. (Edinburgh scale)

Edinburgh Postnatal Depression Scale

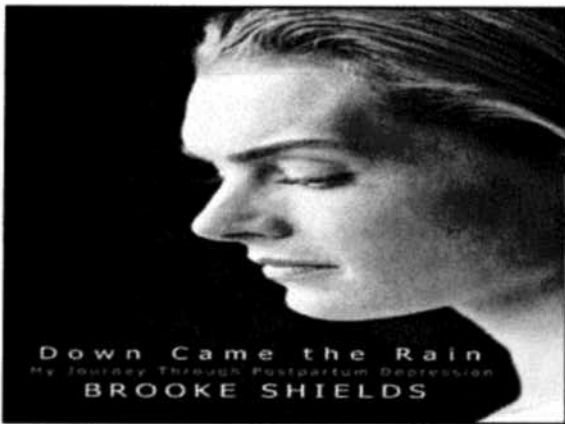
See handout

Case #2

- What questions would the provider want to ask this patient?
- How does prenatal care provider give emergency treatment?
- What resources are available in the patient's community?
- How should the patient be followed up?

Management strategy

- Depends on whether or not the patient has a suicide plan and whether there is a previous history of mental illness and/or suicide attempts.
- Psychiatric referral depends on the community resources. Consultation and co-management is usually sufficient in most cases.
- Gestational age of pregnancy will influence counseling of medication risk.
- Most important take away point ...individualize care plan!



Depression Symptoms

- Antepartum
 - Poor appetite, weight loss
 - Insomnia, irritability, anxiety, moodiness
 - Little or sporadic prenatal care
 - Nicotine, drugs, alcohol use

Depression Symptoms

- Postpartum
 - Feeling irritable, angry
 - Feeling guilty or worthless or being “bad mother”
 - Lack of interest in baby, family and friends
 - Crying uncontrollably
 - Trouble concentrating
 - Inability to sleep when baby sleeps
 - Poor bonding, feel “detached” or “numb”

Perinatal Mood Changes

- Perinatal Blues
- Perinatal Depression
- Perinatal Psychosis

Management Options

- Mild Depression
 - Healthy behavior
 - Support groups
- Moderate Depression
 - Interpersonal psychotherapy
 - Cognitive behavioral therapy
 - Light therapy
 - Medication

Management Options

- Severe Depression
 - Medication
 - Electroconvulsive therapy (contraindicated during pregnancy)
 - hospitalization

Antidepressant Drugs

- SSRI's
 - Celexa, lexapro, paxil, zoloft, prozac
- Non SSRI's
 - Wellbutrin, effexor, remeron, norpramin, pamelor

Peripartum Risks of Antidepressant therapy

- Most SSRI's are pregnancy category C
- Can be used in breastfeeding
- Most common newborn effect is irritability
- PPHN * <1% risk in newborn
 - Studies have small number of patients
- Not a major teratogen except for possibly paxil (heart malformations)
 - Fetal echo needed for patient's exposed in first trimester
- * Persistent pulmonary hypertension of the newborn

Take Away Points on

- Individualize care
- Consult high risk if patient on medications at beginning of pregnancy or started on meds during pregnancy
- If patient stable on meds after consultation and is followed by psychiatry/psychology can remain in low risk clinic with close observation

Case #3

Case #3

C.V. is a 23 year old G1P0 at 10 weeks gestation who presents for prenatal care. She has a history significant for bipolar disorder, anxiety, and substance abuse. She is currently followed at the methadone clinic and would like a refill for her xanax, clonipine, and seroquel. During her new ob intake class she excuses herself to go to the restroom and returns with a "blue powder around her nose " and slurred speech.

High risk, moderate risk, or low risk?

Case #3

- What consultations, referrals for this patient?
- Should she be drug tested ?
- What if she refuses?
- What ethical issues are most likely to arise in the course of this patient's care?

Case #3

- Referral to high risk clinic is recommended
- Consultation with perinatology secondary to possible teratogenic drug exposure (xanax associated with oral clefts in first trimester)
- Multidisciplinary approach with psychiatry, methadone clinic, social work, and neonatology
- Postpartum referral to substance abuse treatment (outpatient vs. inpatient)

ACOG Position

Maternal decision making, ethics, and the law. ACOG Committee opinion, #321, 2005;106:1127-37.

The committee on ethics strongly opposes the criminal prosecution of pregnant women whose activities may appear to cause harm to their fetuses. Efforts to use the legal system specifically to protect the fetus by constraining woman's decision making or punish them for their behavior erode a woman's basic rights to privacy and bodily integrity and are neither legally nor morally justified.
