HIGH RISK PREGNANCY

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To download lecture deck:

References

- Cunningham FG, Leveno KJ, Bloom SL, Spong CY, Dashe JS, Hoffman BL, Casey BM, Sheffield JS (eds).William's Obstetrics 25th edition; 2018; chapter 9 Prenatal care
- www.uptodate.com
- https://www.nichd.nih.gov/health/topics/high-risk
- https://www.who.int/news-room/fact-sheets/detail/adolescent-pregnancy
- Queenan JT, Spong CY, Lockwood CJ. Management of High Risk Pregnancy: An Evidence-based approach, 5th ed. Blackwell Publishing 2007

Outline

- Definition
- High risk conditions
- Diagnosis
- Management

Goals of prenatal care

The major goal of prenatal care is to help ensure the birth of a healthy baby while minimizing risk to the mother.

The components involved in achieving this objective:

1. Early, accurate estimation of gestational age
2. Identification of pregnancies at increased risk for maternal or fetal morbidity and mortality
3. Ongoing evaluation of maternal and fetal health status
4. Anticipation of problems with intervention, if possible, to prevent or minimize morbidity
5. Health promotion, education, support, and shared decision making

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Risk Assessment During Pregnancy

- Risk assessment is part of routine prenatal care.
- Risk factors are assessed systematically because each risk factor present increases overall risk.
- High-risk pregnancies require close monitoring and sometimes referral to a perinatal center, especially if women have complex high-risk conditions.
  - These centers offer many specialty and subspecialty services, provided by maternal, fetal, and neonatal specialists

https://www.msdmanuals.com/professional/gynecology-and-obstetrics/high-risk-pregnancy/overview-of-high-risk-pregnancy

High Risk Pregnancy

A high-risk pregnancy involves at least one of the following:

1. The woman or baby is more likely to become ill or die than usual.
2. Complications before or after delivery are more likely to occur than usual.

- High risk patients require sophisticated maternal and fetal surveillance and in many occasions, difficult management decisions in order to optimize their outcomes

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https://www.nichd.nih.gov/health/topics/high-risk

High risk pregnancy

- A pregnancy is defined as high risk when the probability of an adverse outcome for the mother or child is increased over and above the baseline risk of that outcome among the general pregnant population, by the presence of one of more ascertainable risk factors or indicators.
- Some conditions may require the involvement of a maternal-fetal medicine subspecialist, geneticist, pediatrician, anesthesiologist, or other medical specialist in the evaluation, counseling, and care of the woman and her fetus.
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High Risk conditions:

Medical History and Conditions
Cardiac disease—moderate to severe disorders
Diabetes mellitus with evidence of end-organ damage or uncontrolled hyperglycemia
Family or personal history of genetic abnormalities
Hemoglobinopathy
Chronic hypertension if uncontrolled or associated with renal or cardiac disease
Renal insufficiency if associated with significant proteinuria (≥500 mg/24 hour), serum creatinine ≥1.5 mg/dL, or hypertension
Pulmonary disease if severe restrictive or obstructive, including severe asthma
Human immunodeficiency virus infection
Prior pulmonary embolus or deep-vein thrombosis
Severe systemic disease, including autoimmune conditions
Bariatric surgery
Epilepsy if poorly controlled or requires more than one anticonvulsant
Cancer, especially if treatment is indicated in pregnancy

Obstetrical History and Conditions
CDE (Rh) or other blood group alloimmunization (excluding ABO, Lewis)
Prior or current fetal structural or chromosomal abnormality
Desire or need for prenatal diagnosis or fetal therapy
Periconceptional exposure to known teratogens
Infection with or exposure to organisms that cause congenital infection
Higher-order multifetal gestation
Severe disorders of amnionic fluid volume

Cunningham FG, Leveno KJ, Bloom SL, Spong CY, Dashe JS, Hoffman BL, Casey BM, Sheffield JS (eds).William's Obstetrics 25th edition; 2018; chapter 9 Prenatal care

1. Existing maternal health conditions

Existing health conditions

- **Hypertension:** may proceed to develop into CH with superimposed preeclampsia; may cause fetal growth and amniotic fluid disorders; high risk for preterm delivery and cesarean delivery
- **Diabetes:** high risk for pregnancy-induced hypertensive disease, fetal growth disorders, amniotic fluid disorders, cesarean delivery
- **Kidney disease:** High risk for preterm delivery, low birth weight, and preeclampsia.
- **Autoimmune disease:** Highrisk for preeclampsia, miscarriage, preterm birth and stillbirth; Certain medicines to treat autoimmune diseases may be harmful to the fetus.
- **Thyroid disease:** can cause problems for the fetus, such as heart failure, poor weight gain, and brain development problems;
- **Malnutrition/Obesity:** high risk for fetal growth disorders; obesity is a risk factor for development of GDM, pregnancy-induced hypertension, cesarean delivery

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Existing health conditions

- Viral infections such as HIV, Zika, Covid, Rubella, Varicella, etc: high risk for fetal congenital anomalies, fetal growth disorders;
- Cancers: high risk for preterm labor/delivery, fetal growth disorders; cancer therapy during pregnancy may be harmful to the fetus
- Psychiatric disorders: Certain medicines to treat psychiatric disorders may be harmful to the fetus; high risk for poor prenatal check-ups; high risk for postpartum depression
- Intimate partner violence

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2. Maternal Age

A. Advanced maternal age at first pregnancy (≥ 35 y/o)
B. Teenage Pregnancy

Teenage (adolescent) pregnancy

- At least 10 million unintended pregnancies occur each year among adolescent girls aged 15–19 years in the developing world.
- Complications during pregnancy and childbirth are the leading cause of death for 15–19-year-old girls globally.
- Of the estimated 5.6 million abortions that occur each year among adolescent girls aged 15–19 years, 3.9 million are unsafe, contributing to maternal mortality, morbidity and lasting health problems.
- Adolescent mothers (ages 10–19 years) face higher risks of eclampsia, puerperal endometritis, and systemic infections than women aged 20 to 24 years, and babies of adolescent mothers face higher risks of low birth weight, preterm delivery and severe neonatal conditions

https://www.who.int/news-room/fact-sheets/detail/adolescent-pregnancy

Teenage (adolescent) pregnancy

- Usually associated with history of risky behaviors: smoking, alcohol consumption, drug abuse, sexual promiscuity, mental health problems, or a history of adverse childhood experiences
- Associated medical complications include: preterm birth, low birth weight, perinatal mortality, short interval to next pregnancy, and sudden infant death syndrome
- Pregnant adolescents are high risk for nutritional deficiencies, anemia, HIV infection, and other STIs
- High incidence of pregnancy-induced hypertension
- “Competition for nutrients” between the fetus and the mother could affect pregnancy outcome in adolescents by interrupting the normal growth process.
- Higher incidence of cesarean delivery (secondary to CPD)

https://www.who.int/news-room/fact-sheets/detail/adolescent-pregnancy

Advanced Maternal Age (AMA)

- Maternal age 35 years old and above (at time of first pregnancy)
- High risk for spontaneous miscarriage, ectopic pregnancy, stillbirth, chromosomal abnormalities, multiple gestation, hypertensive disorders, gestational diabetes, operative deliveries, placenta previa, low birth weight,
- an increase in congenital anomalies with advancing maternal age has been attributed to the recognized increase of aneuploidy with advancing maternal age and the association of aneuploid fetuses with structural anomalies.
- Cardiac anomalies seem to increase with maternal age independent of aneuploidy.

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3. Lifestyle factors

Lifestyle factors

- **Alcohol use:** high risk for fetal alcohol spectrum disorders (FASDs), sudden infant death syndrome, and other problems. FASDs may lead to intellectual and developmental disabilities, behavior problems, abnormal facial features, and disorders of the heart, kidneys, bones, and hearing
- **Tobacco use:** high risk for preterm labor and delivery, birth defects, and sudden infant death syndrome (SIDS); Secondhand smoke also puts a woman and her developing fetus at increased risk for health problems.
- **Drug use:** high risk of stillbirth; smoking marijuana during pregnancy can interfere with normal brain development in the fetus, possibly causing long-term developmental problems.

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4. Pregnancy conditions

Pregnancy conditions

- **Multiple gestation:** high risk of preterm labor and delivery, postpartum hemorrhage, preeclampsia, fetal congenital malformations cesarean
- **Gestational diabetes:** high risk for preterm labor and delivery, fetal growth and amniotic fluid disorders and preeclampsia. It also increases the risk that a woman and her baby will develop type 2 diabetes later in life.
- **Previous preterm birth:** high risk for preterm labor and delivery.
- **Birth defects or genetic conditions in the fetus.** Knowing a fetus may have birth defects before birth can help healthcare providers and parents be prepared to give treatment right away after delivery.

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Pregnancy conditions

- Fetal growth disorders: Mothers may need more frequent antenatal surveillance tests
- Amniotic fluid disorders: Mothers may need more frequent antenatal surveillance tests;
- Placenta previa/placental abnormalities
- Exposure to teratogens
- grand multiparity: is a patient who has had ≥5 births (live or stillborn) at ≥20 weeks of gestation, with "great grand multiparity" defined as ≥10 births (live or stillborn) ≥20 weeks of gestation
    - Grand multiparity increases the risk of the following complications:
        1. Placental abnormalities, such as placenta previa and abruption
        2. Postpartum hemorrhage
        3. Macrosomia
        4. Umbilical cord prolapse

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5. Poor Obstetric history

Poor obstetric history

Maternal history of:

- RPL
- Fetal death
- Birth defects/congenital malformations
- preterm delivery/birth
- low birth weight/ macrosomic babies

6. Gynecologic History

Gynecological History

- Uterine septum / didelphys
- Incompetent cervix
- Previous uterine surgery
- Pelvic tumor or malignancy
- Infections - cervicovaginitis

Management

IDENTIFYING THE HIGH RISK PATIENT

- First prenatal check up is very crucial
  - Thorough history and physical exam
- Use of risk score charts (?)
- Routine laboratory tests to screen asymptomatic disease
- Continuous risk assessments during subsequent visits

Management

- Preconception evaluation and counseling of women of reproductive age
- Referral to perinatologist (maternal fetal medicine)
- Screening tests identify fetuses at high risk of aneuploidy
- Genetic counseling
- Lifestyle modification
- Nutrition counseling
- Antenatal surveillance tests: The appropriate initiation and frequency of testing is determined by the indication for the test as well as gestational age. Typically, testing is begun at 32 weeks and is performed on a weekly to twice weekly basis.
  - However, maternal or fetal situations may dictate daily testing

Frequency of Fetal surveillance/antenatal tests

Table 11.5 Fetal surveillance: diagnostic conditions and frequency. The basic formal testing scheme is NST/AFI (modified BPP).

Indicator	GA of Initiation	Frequency
1 Post dates	41 weeks (earlier if EDD unsure)	Twice weekly
2 Hypertensive diseases:		
(a) Preeclampsia (including r/o preeclampsia)	At Dx	Twice weekly (or more frequently depending on severity)
Chronic hypertension	32 weeks	Weekly
(b) Chronic hypertension with IUGR	See IUGR	See IUGR
3 Diabetes mellitus		
(a) GDM		
(i) On diet and exercise (A1)—good control (FBG < 95 mg/dL, PPBG < 140 mg/dL)	Kick counts only	
(ii) On insulin or oral agent (A2)—good or poor control	32 weeks	Twice weekly
(b) Pregestational (Type I, Type II)		
(i) W/out complications—good control	32 weeks	Twice weekly
(ii) W/out complications—poor control	28 weeks	Twice weekly
(iii) W/complications (e.g., poor growth, vascular disease)	28 weeks or when complications arise	Twice weekly
4 Advanced maternal age ≥40 years	32 weeks	Weekly
5 Severe maternal conditions (e.g., cardiac, pulmonary, severe asthma, sickle cell)	32 weeks	Weekly or more frequently
6 Active drug/ETOH abuse or methadone	32 weeks	Weekly

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Table 11.5 Fetal surveillance: diagnostic conditions and frequency. The basic formal testing scheme is NST/AFI (modified BPP).

Indicator	GA of Initiation	Frequency
7 SLE or antiphospholipid syndrome	32 weeks (earlier if microvascular disease)	Weekly or more frequently
8 Thyroid disease		
(a) Uncontrolled	32 weeks	Twice weekly
(b) Maternal Graves disease w/TSI > 130%	36 weeks	Weekly
9 Cholestasis	At Dx (begin before bile acid results)	Twice weekly
10 Herpes gestationis	At Dx	Weekly
11 HIV (on combination Rx)	32 weeks	Weekly
12 Seizure disorder (poorly controlled)	28 weeks	Weekly
13 IVF	36 weeks	Weekly
	40 weeks	Twice weekly
14 History abruption previous pregnancy	2 weeks prior to GA of previous abruption	Weekly
15 Increased MSAFP, increased MSHCG, or low PAPP-A (<1st percentile)	32 weeks	Weekly
16 Oligohydramnios	At Dx	As indicated
17 Polyhydramnios	At Dx	Weekly
18 IUGR (<10th percentile) or R/O IUGR (sono pending)	At Dx	Twice weekly

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Frequency of Fetal surveillance/antenatal tests

Indicator	GA of Initiation	Frequency	
19 Twins:			
(a) di/di w/normal growth and normal AFV	32 weeks	Weekly	NST/Deepest pocket in each sac
	36 weeks	Twice weekly	
(b) mono/di w/normal growth and concordant/normal AFV	28 weeks	Weekly	
	32 weeks	Twice weekly	
(c) di/di w/IUGR and/or discordant growth (>20%) and/or abnormal AFV	at Dx	Twice weekly	
(d) mono/di w/IUGR and/or discordant growth (>20%) and/or discordant AFV	at Dx	Twice weekly	
(e) mono/mono	at GA of intervention	Daily	
20 Triplets	same as mono/di twins	same as mono/di twins	
21 Hx previous IUFD	32 weeks or if previous demise <32 weeks, then begin 2 weeks prior to date of previous demise	Weekly	
22 Fetuses with certain abnormalities (e.g., CDH, gastroschisis, persistent echogenic bowel, increased NT (>3.5 mm))	32 weeks	Weekly	
23 Fetal arrhythmia (i.e., SVT, PACs, etc.)	At Dx	Weekly (BPP if unable to obtain FHR strip)	
24 Fetal heart block	At Dx (≥28 weeks)	Weekly BPP	
25 Fetal anemias (e.g., Rh alloimmunization, parvovirus, NAIT)	≥28 weeks or at onset of disease	Weekly or more frequently	

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Summary

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Thank you!

youtube channel: Ina Irabon

www.wordpress.com: Doc Ina OB Gyne