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Obstetrics & Gynecology

Maternal-Fetal Medicine

CARING FOR THE PREGNANT PATIENT

NO DISCLOSURES

OBJECTIVES

Information you should know prior to beginning the OB clerkship on:

- **Prenatal care**
- **Health disparities in prenatal care**
- **Maternal mortality**

OBSTETRICS & GYNECOLOGY

WHY OB/GYN?

- "I wanted to do a little bit of everything"
- "Mostly healthy patients"
- "Short and satisfying surgeries"
- "I like emergent situations"
- "I wanted to take care of women"
- "It's like the emergency room for pregnancy"
- Continuity of care: from adolescence to menopause
- Mix of primary care and surgery

MY JOURNEY TO OB/GYN

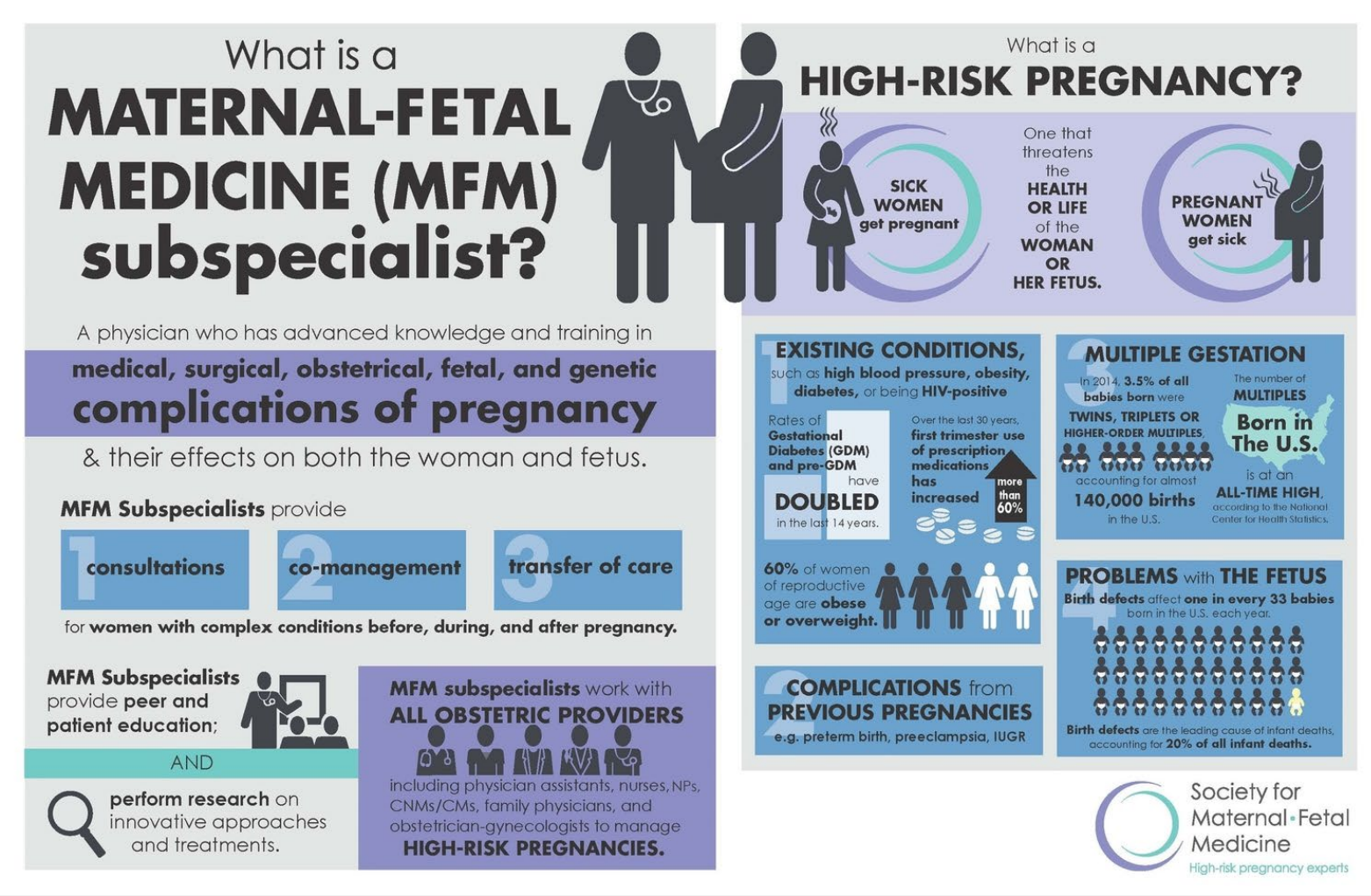
Medical School (MUSC)

Residency (University of Virginia)

Fellowship in Maternal-Fetal Medicine Fellowship (Wake Forest University)

What is Maternal-Fetal Medicine?

High risk pregnancy



PRENATAL CARE

- Understand the importance of prenatal care and what we cover with our patients
- Know the basic components of the prenatal visit in each trimester
  - Lab tests
  - Genetic counseling
  - Ultrasound/fetal assessment
  - Patient education
- Identify high risk patient populations

IMPORTANCE OF PRENATAL CARE

- A comprehensive antepartum care program involves a coordinated approach to medical care and psychosocial support that optimally begins before conception and extends throughout the antepartum period

- Herbst and associates (2003) found that no prenatal care was associated with more than a twofold increased risk of preterm birth
- For each $1 spent for prenatal care, there were estimated savings of $1.49 in newborn and postpartum costs

WHAT DO WE ADDRESS?

We need to cover ALL of these:

- **Medical**
- **Nutritional**
- **Psychosocial**
- **Cultural**
- **Educational needs for patient and family**
- **Continual risk assessment**

PRENATAL VISIT BASICS

Maternal well-being

- (VS, exam/labs as indicated)

Fetal well-being

- Typical US schedule: early/dating, anatomy US
- High risk: additional US, antenatal testing

Identify/address new risks

Patient education

Typical Visit Frequency*

Up to 28 weeks	Every 4 weeks
29-36 weeks	Every 2 weeks
37-41 weeks	Every week

*More frequent for higher risk pregnancies

FIRST PRENATAL VISIT

- Establish pregnancy dating
- Thorough history, including
  - OB history
  - Gyn history
  - Family history (birth defects, intellectual disability)
- Labs
- Exam +/- ultrasound
- Patient education

EDD Confirmation								
Lmp:	– –	=			= EDD	– –		
Initial Exam:	– –	=		Wks	= EDD	– –		
Ultrasonography:	– –	=		Wks	= EDD	– –		
Final EDD:	– –			IVF Transfer:		– –		

Laboratory and Screening Tests*								
Initial Labs	**Date**	**Result**						**Reviewed**
Blood Type	– –	A	B	AB	O			
D (Rh) Type	– –							
Antibody Screen	– –							
Complete Blood Count	– –	HCT/HGB: _____ % _____ g/dL MCV:_____ PLT:_____						
VDRL/RPR (Syphilis)	– –							
Urine Culture/Screen	– –							
HBsAg	– –							
HIV Testing	– –	Pos.	Neg.	Declined				
Chlamydia	– –							
Gonorrhea (When Indicated)	– –							
Rubella Immunity	– –							
Other:								
Supplemental Labs	**Date**	**Result**						
Hemoglobin Electrophoresis	– –	AA	AS	SS	AC			
PPD/Quanta (When Indicated)	– –							
Pap Test (When Indicated)	– –							
HPV (When Indicated)	– –							
Early Diabetes Screen (When Indicated)	– –	Pos.	Neg.	Declined				
Varicella Immunity (When Indicated)	– –							
Cystic Fibrosis	– –	Pos.	Neg.	Declined				
Spinal Muscular Atrophy	– –	Pos.	Neg.	Declined				
Fragile X	– –	Pos.	Neg.	Declined				
Tay–Sachs	– –	Pos.	Neg.	Declined				
Canavan Disease	– –	Pos.	Neg.	Declined				
Familial Dysautonomia	– –	Pos.	Neg.	Declined				
Genetic Screening Tests (See Form B)	– –	Pos.	Neg.	Declined				
Zika Virus (When Indicated, All Trimesters)†	– –							
Other:								
8–20-Week Aneuploidy Screening	**Date Test Performed**	**Result**						
Aneuploidy Screening Offered	– –	Accepted	Declined	GA Too Advanced				
1st Trimester Aneuploidy Screening	– –	Pos	Neg					
2nd Trimester Serum Screening	– –	Pos	Neg					
Integrated Screening	– –	Pos	Neg					
Cell-Free DNA	– –	Pos	Neg					
CVS	– –	Karyotype: 46,XX Or 46,XY/Other_____ Array						
Amniocentesis	– –	Karyotype: 46,XX Or 46,XY/Other_____ Array						
Amniotic Fluid (AFP)	– –	Normal	Abnormal					
Other:								

ACOG Antenatal Record Form

PREGNANCY DATING

Establishing an accurate due date is critical

- **EDD – estimated due date**
- **EDC – estimated date of confinement**
- **(both are the same thing)**

LMP (last menstrual period=1st day of last menses)

Best established in the first trimester (up to 13w6d)

***IVF pregnancies should be dated by embryo transfer date**

Change due date if ultrasound measurements are discrepant enough from sure LMP:

Table 1. Guidelines for Redating Based on Ultrasonography ⇦

Gestational Age Range*	Method of Measurement	Discrepancy Between Ultrasound Dating and LMP Dating That Supports Redating
≤13 6/7 wk	CRL	
• ≤ 8 6/7 wk		More than 5 d
• 9 0/7 wk to 13 6/7 wk		More than 7 d
14 0/7 wk to 15 6/7 wk	BPD, HC, AC, FL	More than 7 d
16 0/7 wk to 21 6/7 wk	BPD, HC, AC, FL	More than 10 d
22 0/7 wk to 27 6/7 wk	BPD, HC, AC, FL	More than 14 d
28 0/7 wk and beyond†	BPD, HC, AC, FL	More than 21 d

Abbreviations: AC, abdominal circumference; BPD, biparietal diameter; CRL, crown–rump length; FL, femur length; HC, head circumference; LMP, last menstrual period.

*Based on LMP.

†Because of the risk of redating a small fetus that may be growth restricted, management decisions based on third-trimester ultrasonography alone are especially problematic and need to be guided by careful consideration of the entire clinical picture and close surveillance.

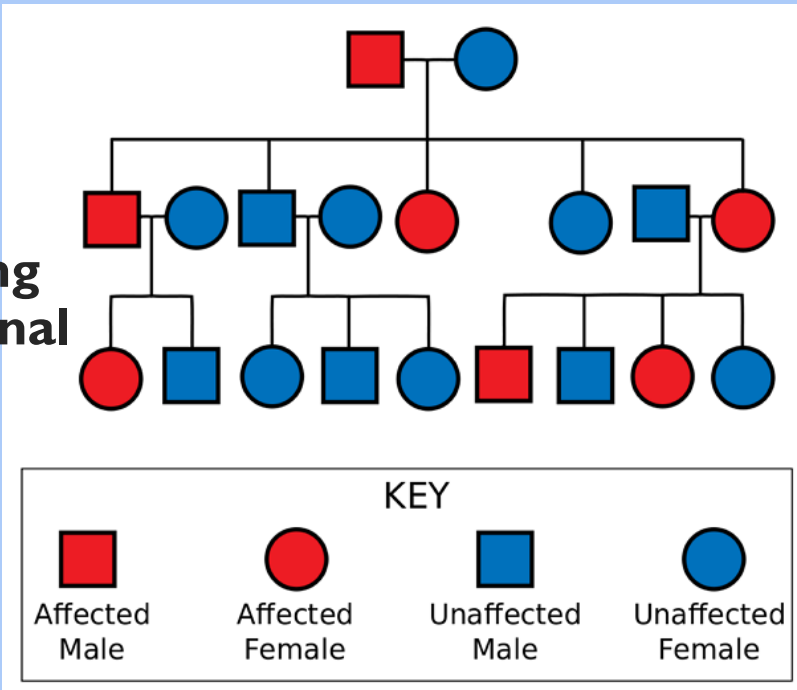
If LMP is not NOT sure, get an ultrasound ASAP and use that for dating

GENETIC TESTING

- **Focused family history**
  - **Birth defects**
  - **Intellectual disability since birth**
  - **Inborn errors of metabolism**
  - **Known genetic diseases in the family**

Offer referral to Genetic Counseling

- **Aneuploidy screening**
- **Carrier screening**
- **Family history/Pedigree**
  - **Focused genetic testing based on family/personal history**



CARRIER SCREENING

Autosomal recessive conditions -> baby can be affected if both parents are carriers

All patients should be offered the option of screening for the following (opt in):

Basic carrier screening

- Hemoglobinopathies
  - Thalassemias, sickle cell
- Cystic fibrosis (CF)
- Spinal muscular atrophy (SMA)

Special populations

Fragile X

- Family history of fragile X syndrome or intellectual disability suggestive of it
- Premature ovarian failure

Ashkenazi Jewish descent

- Canavan disease
- Cystic fibrosis
- Familial dysautonomia
- Tay-Sachs disease

ANEUPLOIDY SCREENING

- **Aneuploidy screening options:**
  - **Cell-free fetal DNA (cfDNA) – aka NIPS/NIPT (non-invasive prenatal screening/testing)**
    - **Detects placental SNPs in maternal circulation, can detect abnormal amounts of chromosomes 13, 18, 21, X, Y**
    - **Indicates fetus is AT RISK, NOT diagnostic**
    - **Counseling required, diagnostic testing options should be discussed**
  - **Less commonly used older tests:**
    - **Quad screen**
    - **First trimester screen**
    - **Integrated screen**

Screening for fetal chromosomal abnormalities. ACOG Practice Bulletin No. 226. ACOG. Obstet Gynecol 2020;136:e48-69.

Table 2. Characteristics, Advantages, and Disadvantages of Common Screening Tests for Chromosomal Abnormalities

Screening Approach	Approximate Gestational Age Range for Screening (Weeks)	Detection Rate (DR) for Trisomy 21 (%)	Screen Positive Rate* (%)	Advantages	Disadvantages	Method
Cell-free DNA†	9–10 to term	99	2–4% Includes inability to obtain results, which is associated with increased risk†	1. Highest DR 2. Can be performed at any gestational age after 9–10 weeks 3. Lowest false-positive rate	Results may reflect underlying maternal aneuploidy or maternal disease	Several molecular methods
First trimester‡	10–13 6/7§	82–87‖	5	1. Early screening 2. Single time point test	Lower DR than tests with first and second trimester component NT required	NT+PAPP-A, free beta hCG, +/− AFP¶
Quad screen‡	15–22	81	5	1. Single time point test 2. No specialized US required	Lower DR than first trimester and first and second trimester combined tests	hCG, AFP, uE3, DIA
Integrated‡	10–13 6/7§, then 15–22	96	5	High DR	Two samples needed No first-trimester results NT required	NT+PAPP-A, then quad screen
Serum integrated‡	10–13 6/7§, then 15–22	88	5	1. DR compares favorably with first-trimester screening 2. No specialized US required	Two samples needed No first-trimester results	PAPP-A + quad screen
Sequential**: stepwise	10–13 6/7§, then 15–22	95	5	1. First-trimester results provided 2. Comparable performance to integrated, but FTS results provided	Two samples needed NT required	NT+ free beta hCG + PAPP-A, +/− AFP¶, then quad screen
Contingent screening**		88–94	5	First-trimester test result: Positive: diagnostic test or cell-free DNA offered Negative: no further testing Intermediate: second-trimester test offered Final: risk assessment incorporates first- and second-trimester results	Possibly two samples needed NT required	NT+hCG+ PAPP-A, +/− AFP¶, then quad screen

HEALTHCARE DISPARITIES IN OB/ MATERNAL MORTALITY

HEALTHCARE DISPARITIES IN OB

01

Be familiar with known disparities in obstetrics in the US and South Carolina

02

Understand the multilevel approach to healthcare disparities

03

Review recommendations from ACOG on reducing health disparities

MATERNAL MORTALITY - US

- 700 pregnancy-related deaths in the United States each year
- For every pregnancy-related death, there are 70 severe maternal morbidity events

Maternal health disparities are worse for specific racial and ethnic minorities:

- Non-Hispanic Black and Indigenous individuals have higher rates of pregnancy-related deaths and severe maternal morbidity
- Indigenous and Black women have approximately two to three times, respectively, higher pregnancy-related mortality ratios compared to white women

MATERNAL MORTALITY - SC

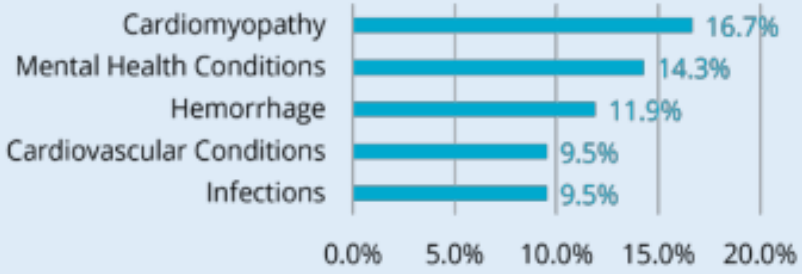
South Carolina Maternal Morbidity and Mortality Review Committee

Legislative Brief
March 2023

The South Carolina Maternal Morbidity and Mortality Review Committee (SCMMMRC), established by state law in 2016, investigates maternal deaths associated with pregnancy. Data are reported through vital records, voluntary reporting, and CDC notification. A **pregnancy-related (PR)** death occurs when a person dies while pregnant or within one year of pregnancy from a pregnancy complication, a chain of events initiated by the pregnancy, or a condition made worse by the pregnancy.[1]

VISION: To eliminate preventable maternal deaths, reduce maternal morbidities, and improve population health for people of reproductive age in South Carolina.

Leading Causes of Pregnancy-related Deaths



Note: Years 2018-2019

The top three underlying causes of maternal deaths for 2018 and 2019 were cardiomyopathy, mental health conditions and hemorrhage. The SCMMMRC defines mental health conditions as psychiatric disorders (such as depression), suicide, and substance use disorder. Combined, cardiomyopathy and cardiovascular conditions account for 1 in 4 PR deaths. **The leading cause of death in non-Hispanic Blacks was cardiomyopathy, while mental health conditions were the leading cause of death for non-Hispanic Whites.**

MATERNAL MORTALITY - SC

Committee Recommendations for Reducing Pregnancy-Related Deaths in South Carolina

The South Carolina Maternal Morbidity and Mortality Review Committee was asked to prioritize recommendations in order of importance to prevent pregnancy-related deaths.

1	**Heath Care Access** - All birthing women should have an established primary care provider who can address chronic health, mental health conditions before, during and after pregnancy.
2	**Clinical Intervention** - All SC birthing hospitals should adopt hemorrhage protocols/safety bundles and educate providers and staff regarding hemorrhage recognition and management to include quantitative blood loss measurement, surgical management, ICU care and blood product administration.
3	**Continuity of Care** - All birthing women should have a post-partum appointment within 1-3 weeks following delivery.

ACOG'S STRATEGIES TO ADDRESS HEALTHCARE DISPARITIES IN OB

- Alliance for Innovation on Maternal Health – safety bundles, QI
- Optimizing postpartum care
- Maternal levels of care
- Expansion of Medicaid coverage postpartum
- Supporting culture change in medicine
- Maternal Health Awareness Day

WHAT IS MUSC DOING TO HELP?

L&D QI focus/ initiatives	Alliance for Innovation on Maternal Health – safety bundles, QI
Increased visits, 1-3 wks vs 6	Optimizing postpartum care
Level IV Regional Perinatal Center	Maternal levels of care
Mental health resources, establish PCP	Expansion of Medicaid coverage postpartum
Antiracism in medicine	Supporting culture change in medicine
	Statewide initiatives: BOI SIM – visit hospitals to simulate OB emergencies

QUESTIONS?