IN BETWEEN TIME: INTERCONCEPTION HEALTH CARE STARTING WITH THE POSTPARTUM VISIT

PART 2: CARE FOR WOMEN WITH CHRONIC DISEASES AND MATERNAL COMPLICATIONS OF PREGNANCY

THE NATIONAL PRECONCEPTION CURRICULUM & RESOURCE GUIDE FOR CLINICIANS

MODULE 5

The National Preconception Curriculum & Resources Guide for Clinicians
MODULE 5
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TARGET AUDIENCE

Clinicians, including physicians, nurse midwives, nurse practitioners and physician assistants, who provide postpartum care

ACCREDITATION AND CREDIT DESIGNATION STATEMENTS

- **Accreditation Statement**—This activity has been planned and implemented in accordance with the Accreditation Council for Continuing Medical Education (ACCME) through joint providership of **Albert Einstein College of Medicine** and the **University of North Carolina Center for Maternal & Infant Health**. **Albert Einstein College of Medicine** is accredited by the ACCME to provide continuing medical education for physicians.
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OBJECTIVES

- Describe the importance of the interconception period for impacting women's short and long term health
- Identify clinical strategies for providing individualized interconception care based on common gestational complications or conditions
- Provide appropriate assessments and referrals to address chronic diseases that predated the woman’s most recent pregnancy

OUTLINE

- Background and Review
- Rationale for Emphasis on Chronic Disease in Postpartum and Interconception Care
- Hypertensive Disorders of Pregnancy
  - Pregnancy-Induced Hypertension
  - Pre-existing Hypertension
- Glucose Abnormalities
  - Gestational Diabetes Mellitus
- Venous Thromboembolism
- Anemia

The content of this module is designed to provide clinicians with evidence-informed guidance on interconception care for women with certain chronic conditions

INFORMATION SOURCES

- Recommendations are drawn from national professional guidelines
  - American Academy of Family Physicians
  - American College of Nurse-Midwives
  - American Congress of Obstetricians and Gynecologists
  - Association of Women's Health Obstetric and Neonatal Nurses
  - Interconception Care Project of California ("California Toolkit")

ABOUT THE "CALIFORNIA TOOLKIT"

- The Interconception Care Project for California ("California Toolkit") was:
  - Created to provide evidence-based postpartum clinical management algorithms and companion patient education materials
  - Designed to guide risk assessment, management and counseling
  - Produced in 2011 and revised in 2017 by the American Congress of Obstetricians and Gynecologists, District IX, the March of Dimes California Chapter, and the Preconception Health Council of California
  - Developed by a panel of obstetric and other health experts

BACKGROUND AND REVIEW OF INTERCONCEPTION CARE

For information specific to Preconception Care please access the national toolkit at http://beforeandbeyond.org/toolkit/ and other CME modules at

http://beforeandbeyond.org/modules/

WHEN IS THE "INTERCONCEPTION" PERIOD?

- It is defined as the period between pregnancies
  - It begins at the end of one pregnancy
  - It ends with the conception of the next pregnancy
- It can only be defined retrospectively

WHERE DID FOCUS ON INTERCONCEPTION CARE COME FROM?

- Almost 30 years ago the link between a woman's health before pregnancy and pregnancy outcomes was made
- More recently, epidemiological evidence has underscored that a key predictor of a poor pregnancy outcome is a previous poor outcome

PREGNANCY HAS BEEN IDENTIFIED AS A MEDICAL STRESS TEST FOR LIFE

- The physiologic demands of pregnancy require almost every maternal organ to work harder to meet gestational requirements
- Gestational syndromes develop when an organ system cannot meet the increased physiological demands of pregnancy—the two most common are gestational diabetes mellitus (GDM) and hypertensive disorders of pregnancy (HDP)
- Delivery induces remission but it is transient
- The processes of aging and other stressors, such as obesity, set the stage for reappearance of these syndromes later in life —now in the form of chronic diseases

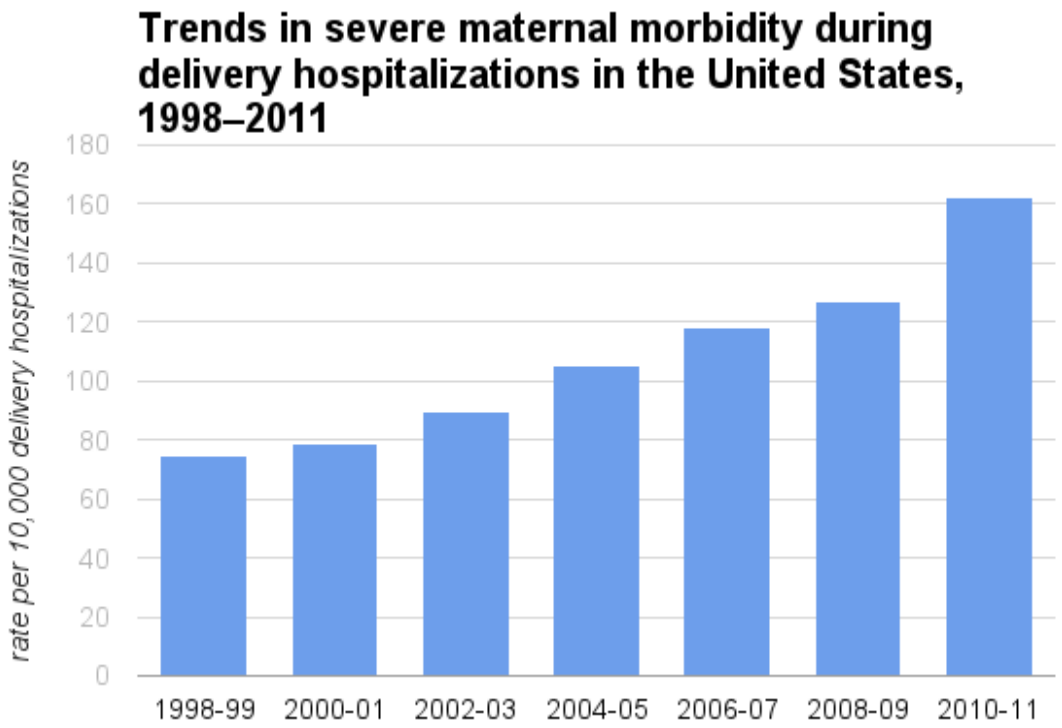
Source: Williams, D. Curr Opin Obstet Gynecol 2003; 15: 465-471.

THEREFORE. . .

- Health in a prior pregnancy can predict:
  - A woman's own health risks (between and beyond pregnancies)
  - Risks for subsequent pregnancies and offspring

These findings require that we provide reproductive and primary health care in a new, more integrated manner to help women achieve lifelong wellness for themselves and their families

PREGNANCY IS NOT A DISEASE...
But it is accompanied by a great deal of morbidity



- Maternal morbidities are conditions that result from pregnancy or are made worse by pregnancy
- Severe morbidity is a complication so significant that it nearly causes death
  - Affects 60,000 women per year and has increased over time

Source: Creanga, Andreea A. et al. Journal of Women's Health (2014)

Module 4: “In Between Time: Routine Postpartum Care for Every Woman” discussed an under-utilized interconception/prevention opportunity:

THE POSTPARTUM VISIT

To review Module 4, visit:

http://beforeandbeyond.org/modules/

THE "BIG 10" CORE CONTENT AREAS FOR THE POSTPARTUM VISIT FOR **EVERY** WOMAN

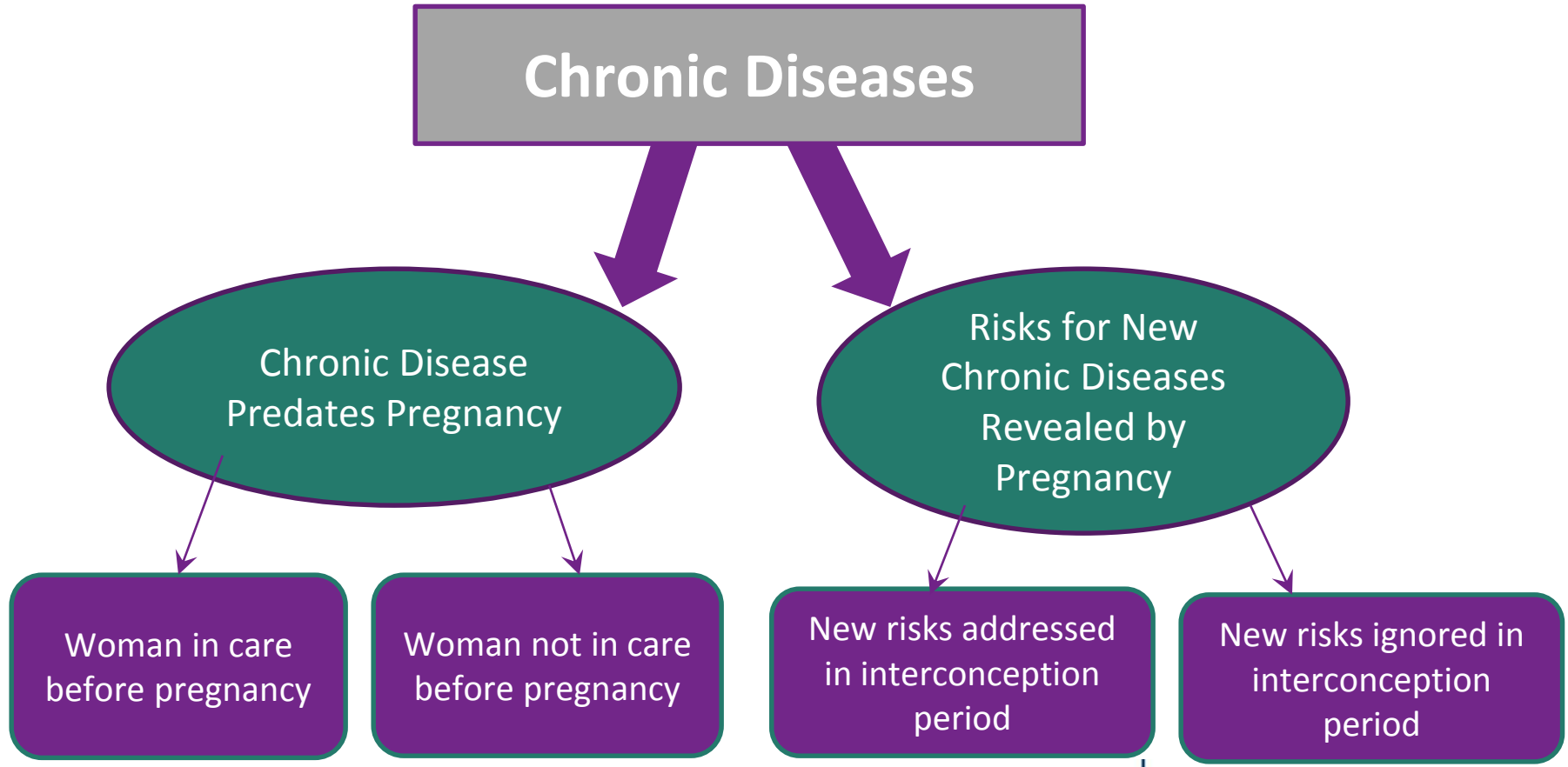
1. **Attend the Postpartum Visit**

   At the visit, assess and address**:**

2. **Weight and Nutrient Intake**
3. **Physical Exercise**
4. **Tobacco Avoidance**
5. **Responsible Alcohol Consumption**
6. **Interpersonal Violence**
7. **Depression and Other Perinatal Mood Disorders**
8. **Immunizations**
9. **Desires about Interpregnancy Interval**
10. **Contraception and STI Risks**

However, women with certain chronic conditions and related pregnancy complications need care beyond the “Big 10” Core Content

Risks for and Diagnoses of Chronic Diseases Present in a Variety of Ways



MANAGING MEDICAL CONDITIONS: OVERVIEW

- Chronic health conditions are common in women of reproductive age
- More than 50% of women age 18-44 have one or more risk factors for developing a chronic disease
- Women of color have a higher prevalence of chronic disease

Sources: (1) Association of Maternal and Child Health Programs, 2008;
(2) Ranji U, Salganicoff A Women's Health Care Chartbook, 2011

STRATEGIES FOR ADDRESSING RISKS OF CHRONIC DISEASE DURING THE INTERCONCEPTION PERIOD

- Address the "Big 10" core postpartum content with every woman
  - Outlined in BeforeandBeyond.org CME Module 4. Access at http://beforeandbeyond.org/modules/
  - Tailor the emphasis on certain topics to the needs of each woman
- Assess disease status
- Educate the woman about her short- and long- term health prospects
- Educate about the risks of chronic disease on future pregnancy outcomes and the risk of future pregnancy on chronic disease
- Explore a woman's "reproductive life plan," including ideal and desired interconception interval

ADDRESSED IN THIS MODULE

Common Pregnancy Complications that May Be Markers for Future Chronic Diseases

- Hypertensive disorders of pregnancy (HDP)
- Gestational diabetes mellitus (GDM)
- Iron-deficiency anemia
- Venous thromboembolism

MODULE LAYOUT AND STRUCTURE

Using a case study framework, each of these topics will be discussed in the following order:

- Case study introduction
- Background and significance of diagnosis to women's health
- Assess disease status and special needs at the postpartum visit
- Disease impact on short and long-term health
- Reproductive life planning
- Case study review

SOME OTHER CHRONIC DISEASES OF SIGNIFICANCE IN THE INTERCONCEPTION PERIOD

- Asthma
- Psychiatric conditions
- Seizure disorders
- Thyroid disease
- **…and others**

See California Toolkit for Guidance on these and other conditions not specifically adressed in this module: http://everywomancalifornia.org/postpartumvisit

HYPERTENSIVE DISORDERS OF PREGNANCY ("HDP")

PRE-ECLAMPSIA/ECLAMPSIA

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CASE STUDY 1

- Ms. G is a 23 yo G1P1 who delivered at 35 weeks GA after induction for preeclampsia with severe features. She presents 7 weeks after birth for her postpartum visit. Today her BP is 128/76. Her pre-pregnancy BMI was 28; she gained 32 lbs during pregnancy and has lost 4 lbs. She is not taking medication or using contraception.

Beyond the "Big 10" core components of routine postpartum care what special assessments, treatment regimens, and counseling should be included in her visit?

BACKGROUND AND SIGNIFICANCE: HDP

- HDP includes
  - Gestational Hypertension
  - Preeclampsia (de novo/superimposed)
  - Eclampsia
- HDP represents the most common complication of pregnancy (prevalence: 6-8%)

BACKGROUND AND SIGNIFICANCE: IMPACT OF HDP ON A WOMAN'S HEALTH

- Increased risk for developing chronic hypertension (2-4 x more likely)
- Increased risk for subsequent cardiovascular and cerebrovascular diseases (two of the three leading causes of death for women)
  - Risk especially high when associated with preterm delivery
- Often first manifestation of metabolic syndrome
- Increased risk for Type II Diabetes Mellitus (T2DM)
- Risk for recurrence in future pregnancies

Sources: (1) Bellamy, et al., BMJ, 2007; (2) Lykke, et al., Htn, 2009; (3) Carr, et al., Hypertens Preg, 2009; (3) Centers for Disease Control, 2014

ASSESS DISEASE STATUS: SPECIAL NEEDS AT THE POSTPARTUM VISIT FOR HDP

- Accurate Blood Pressure Measurement in the Office: should occur once 7-10 days after delivery, and again 6-8 weeks postpartum
  - Seated quietly for 5 minutes in a chair (not exam table)
  - Feet on the floor
  - Arm supported at heart level
  - Appropriate-sized cuff (covering 80% of the arm)
  - Two measurements should be made
- Counsel on weight loss for patients with BMI >25
- Consider hypertensive profile when counseling regarding postpartum contraceptive method (i.e., estrogen-containing methods)

Source: The Seventh Report of the Joint National committee on Prevention, Detection, and Evaluation of High Blood Pressure (JNC 7)

ASSESS DISEASE STATUS: BLOOD PRESSURE CLASSIFICATION

Classification	Systolic BP (mm Hg)		Diastolic BP (mm Hg)
Normal	<120	and	<80
Prehypertension	120-139	or	80-89
Stage 1 Hypertension	140-159	or	90-99
Stage 2 Hypertension	≥160	or	≥100

Source: Disease Classifications Adopted by JNC 7 (2003) and Unchanged with JNC 8 (2014)

CALIFORNIA TOOLKIT
POSTPARTUM VISIT ALGORITHM

PREECLAMPSIA

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Postpartum Visit Algorithm: Preeclampsia

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District IX / CA

At 7-10 days after delivery: Assess blood pressure [2]
- Persistent blood pressure >150/90mm Hg should be treated with antihypertensive medications, and patient should have subsequent follow-up appointment within 7-10 days
- If blood pressure <140/90mm HG: follow up with patient during 6-week postpartum visit

Proper blood pressure measurement: [3]
- Appropriate size cuff (length 1.5 times the upper arm circumference or a cuff with a bladder that encircles 80% of more of the arm).
- BP should be measured after ≥5 minutes of rest.
- Patient should be seated with the cuff positioned at the level of the heart, and both feet on the ground.

Assess for persistent hypertension (blood pressure SBP ≥140 mm Hg or DBP ≥90mm Hg [1])

Blood pressure now <140/90 mm Hg

Blood pressure remains ≥140/90 mm Hg

- Refer for ongoing care to a primary care provider, or provide on-going care.
- Advise patient to be screened regularly for new onset hypertension, diabetes, and lipid disorders. [1, 2]
- Discuss delaying next pregnancy until blood pressure goal of 140/90 mm Hg has been reached. [1, 2]

- Follow-up: [1]
  - If 140-159/90-104 mm Hg, follow up regularly.
  - If BP > 160/105 mm Hg, start antihypertensive medications. Consider future pregnancy goals when selecting medications.
- Follow-up on any persistent abnormalities from patient's past labs.
- If echocardiogram was performed, note cardiac function parameters (e.g., ejection fraction, left ventricular size) and use results in patient's follow-up and in counseling regarding future childbearing.

- Discuss risk of future cardiovascular disease & overall risk reduction strategies. [2, 4]
- Encourage potentially modifiable lifestyle activities, such as increased physical activity and weight loss (see Postpartum Overweight/Obesity algorithm).[2] Refer to dietician as needed.
- Discuss long-acting, reversible contraceptive (LARC) methods or permanent contraception; avoid estrogen-containing contraception (associated with increased BP).

Future Pregnancy Counseling[2,5]
- Recommend a preconception checkup prior to next pregnancy to assess blood pressure, review prognosis for upcoming pregnancy, and bring other medical problems (i.e. diabetes) under the best control possible.
- Discuss elevated risk of recurrence of preeclampsia during subsequent pregnancies.
- Discuss low-dose aspirin (81mg/day) use starting between 12-28 weeks. Pregnant women are at high risk for preeclampsia if they have 1 or more risk factors: history of preeclampsia, multifetal gestation, chronic hypertension, diabetes (Type 1 or 2), renal disease or autoimmune disease.

Ask: Do you want to have any more children? If so, when?

Recommend the ABCS:
folic A cid: A multivitamin with 400 mcg of folic acid each day.
B reastfeeding: Exclusive breastfeeding for 6 months. Breastfeeding does not prevent pregnancy.
C ontraception: Contraception options based future pregnancy intentions. See CDC Medical Eligibility Criteria for Contraceptive Use.
S pacing: Babies are born healthier when there are at least 18 months between pregnancies.

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ASSESS DISEASE STATUS: POSTPARTUM VISIT SCHEDULE FOR HDP

- 7-10 Days Postpartum
  - Assess blood pressure of all preeclampsia patients
  - If >150/90 mm Hg begin anti-hypertensive treatment
- 14-20 Days Postpartum
  - Follow up with all preeclampsia patients with BP >140/90 mm Hg at visit 7-10 days postpartum
- Approximately 6 weeks postpartum
  - Follow up with all preeclampsia patients with BP <140/90 mm Hg at visit 7-10 days postpartum
  - If you are not her primary care provider, arrange further follow up with a primary care provider

Source: Interconception Care Project of California, 2015

ASSESS DISEASE STATUS: ONGOING CARE RECOMMENDATIONS FOR HDP

California Toolkit Recommendations

- Advise regular screening for hypertension, diabetes, and lipid disorders
- Discuss risk of future cardiovascular disease
- Encourage potentially modifiable lifestyle activities (weight loss, exercise)
- Refer to PCP for ongoing care

SCREENING GUIDELINES
ASSESS DISEASE STATUS: CLINICAL ASSESSMENTS

- Women with a history of preeclampsia complicated by preterm delivery *or* preeclampsia in more than one pregnancy:
  - Yearly assessment of: blood pressure, lipids, fasting blood glucose, and BMI
- Women with a pregnancy complicated by another form of HDP
  - No clear guidelines - current recommendation for all adults with "increased risk" of HTN: annual blood pressure check beginning at 18 years of age

SHORT AND LONG-TERM HEALTH IMPACT: HDP

- Recurrence risk in subsequent pregnancies 20-50%
  - Risk of recurrence varies by specific HDP diagnosis:
    - 19% for gestational hypertension (highest risk if earlier onset)
    - 32% for pre-eclampsia
    - 46% for pre-eclampsia superimposed on chronic hypertension
    - 7% for HELLP (Hemolysis, Elevated Liver enzymes, and Low Platelet) (2015 meta-analysis)
    - 2% Eclampsia
- Increased risk of cardiovascular disease later in life

Source: Zhang J, Troendle JF, Levine RJ. Paediatr Perinat Epidemiol 2001;15

REPRODUCTIVE LIFE PLANNING: HDP

If future pregnancies are desired,

- Discuss delaying pregnancy until BP goal of ≤ 140/90 mm Hg has been achieved
- Avoid treatment with:
  - Angiotensin-converting enzyme inhibitors (ACEI)
  - Angiotensin II receptor blockers (ARB)
- Discuss increased risk of pre-eclampsia
- Educate about prophylactic low-dose aspirin during next pregnancy to decrease risk of recurrence

Contraception management

- For women with persistent hypertension, avoid estrogen-containing methods

REVISIT CASE STUDY 1

- Ms. G is a 23 yo G1P1 who delivered at 35 weeks GA after induction for preeclampsia with severe features. She presents 7 weeks after birth for her postpartum visit. Today her BP is 128/76. Her pre-pregnancy BMI was 28; she gained 32 lbs during pregnancy and has lost 4 lbs. She is not taking medication or using contraception.

Beyond the "Big 10" core components of routine postpartum care what special assessments, treatment regimens, and counseling should be included in her visit?

CASE STUDY 1
FOLLOW UP

- Review prenatal and intrapartum medical records
  - Ms. G was overweight (BMI 28) prior to pregnancy and gained slightly more than recommended. Discuss weight loss [See Part 1]
- Assure accuracy of BP measurement
  - Ms. G's BP should be taken twice after 5 minutes rest with feet flat on the floor on appropriate cuff size
- Address the "Big 10" core content for postpartum care for Every Woman
  - Pay special attention to weight retention

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CASE STUDY 1
FOLLOW UP - *Continued*

- Discuss future cardiovascular risks with Ms. G and the importance of her sharing previous preeclampsia diagnosis with all health care providers
  - Ms. G is at risk for future heart disease and future preeclampsia
  - Because of PTB and PE, Ms. G should be reminded to have yearly assessments of BP, lipids, fasting glucose and weight
- Discuss desire for future pregnancies and provide appropriate contraception
  - Ms. G is not using contraception
  - Discuss birth spacing and counsel on contraception, including LARC

DIABETES

GESTATIONAL DIABETES MELLITUS

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CASE STUDY 2

- Ms. R is a 28 y/o G2P2 who entered pregnancy with a BMI of 23 and no history of glucose intolerance. She was diagnosed with GDM at 24 weeks and was managed by diet until 31 weeks GA when she was placed on Glyburide. At 36 weeks she began insulin injections. Her total gestational weight gain was 31 pounds. At 39 weeks GA, the patient had a spontaneous vaginal delivery (SVD). Neither she nor her baby had any complications. Ms. R was discharged from the hospital with a normal blood sugar. She presents at 6 weeks for her postpartum visit, is breastfeeding and wishes to discuss contraception.

Beyond the "Big 10" core components of routine postpartum care what special assessments, treatment regimens, and counseling should be included in her visit?

BACKGROUND AND SIGNIFICANCE: GDM

- Gestational diabetes mellitus (GDM) is defined as glucose intolerance with onset during pregnancy
- The definition applies whether insulin or only diet modification is used for treatment
  - If persistent beyond pregnancy, may be overt T2DM
- Diagnosed during pregnancy, usually between 24-28 weeks gestation
- Depending on diagnostic criteria and population, 1-14% of all pregnancies are complicated by GDM

BACKGROUND AND SIGNIFICANCE: SPECIAL NEEDS AT POSTPARTUM VISIT

- Women with GDM require follow up blood glucose testing and counseling on T2DM risk reduction at the postpartum visit
- The American Diabetic Association (ADA) recommends testing 6-12 weeks postpartum
- Unfortunately, delivery of appropriate postpartum care for GDM is low
  - Approximately 50% of women in Kaiser Permanente Southern California Medical Program between 1999 and 2006 had postpartum glucose testing in the 6 months after delivery; only 23% of women were tested in the 6-12 week period recommended by ADA
  - In a study of providers in North Carolina, only 21% of providers screened for diabetes mellitus postpartum

Sources: (1) Lawrence JM, Black MH, Hsu JW, Chen W, Sacks DA. Diabetes Care 2010;
(2) Baker AM, Brody SC, Salisburg K, Schectman R, Hartmaan KE. NC Med J 2009 Vol 70 No. 1;
(3) Clark HD, Graham ID, Karovitch A, Keely EJ Am J Obstet Gynecol 2009;
(4) Vesco KK, Dietz PM, Bulkely J, Bruce FC, Callaghan WM, England L, Kimes T, Bachman DJ, Hartinger KJ, Hornbrook MC. Am J Obstet Gynecol 2012.

ASSESS DISEASE STATUS: POSTPARTUM VISIT FOR GDM

- Test for diabetes using the 75g 2-hour Oral Glucose Tolerance Test 6-12 weeks after delivery
  - If result is normal <140 mg/dl, retest 1 year postpartum then at least every 3 years
  - If result is 140-199 mg/dl, **provide or** refer for pre-diabetes management, nutrition **consultation**, and **arrange for** annual blood glucose evaluation
  - If result is >200 mg/dl, **provide or refer for diabetes management to include:**
    - Evaluate HbA1c i**mmediately and every 3 months**
    - Supply or prescribe blood glucose meter
    - Prescribe oral medications
    - Refer for nutrition consultation
- Studies suggest that testing rates 3 months to 1 year postpartum increase if reminders are given to providers (EMR prompts) and patients (phone calls/texts/email)

CALIFORNIA TOOLKIT
POSTPARTUM VISIT ALGORITHM

GESTATIONAL DIABETES MELLITUS

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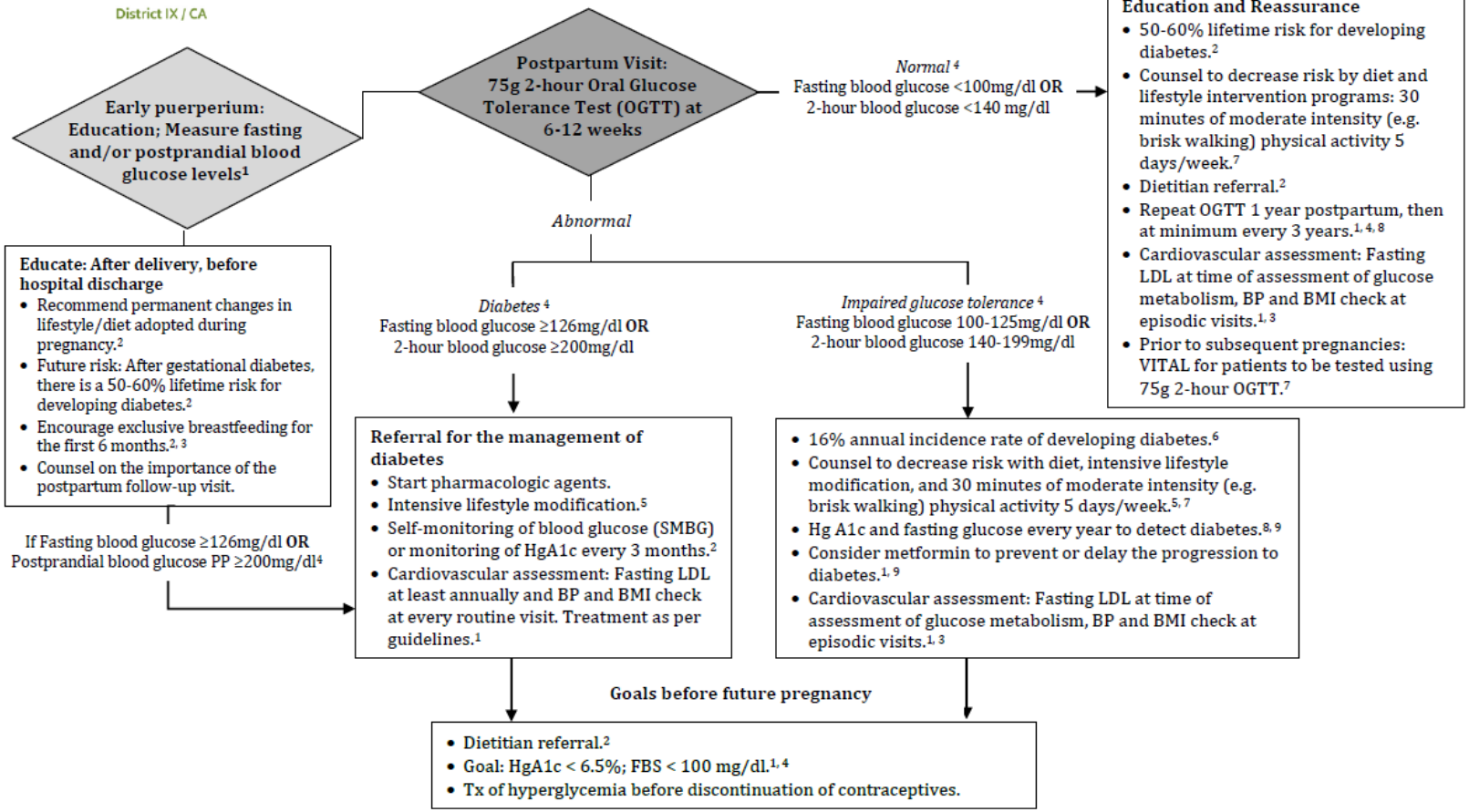
Postpartum Visit Algorithm: Gestational Diabetes



Ask: Do you want to have any more children? If so, when?

Recommend the ABCS:

folic Acid: A multivitamin with 400 mcg of folic acid each day.

Breastfeeding: Exclusive breastfeeding for 6 months. Breastfeeding does not prevent pregnancy.

Contraception: Contraception options based on future pregnancy intentions. The U.S. Medical Eligibility Criteria provides guidelines for contraceptive methods which are safe for women with specific characteristics and medical conditions.[10]

Spacing: Babies are born healthier when there are at least 18 months between pregnancies.

SHORT AND LONG TERM HEALTH IMPACT: GDM

- Subsequent development of metabolic diseases including:
- Type 2 Diabetes Mellitus (T2DM)
  - 20-50% chance of developing diabetes in the five to ten years after index pregnancy (ADA)
  - 10-30% of parous women with T2DM had GDM during pregnancy
- Metabolic Syndrome
  - Hypertension (26% increased risk)
  - Dyslipidemia
  - Microalbuminuria

Sources: (1) Cheung 2003; (2) Verier-Mine, Diabetes Metab, 2010; (3) Kaaja & Greer, JAMA, 2005; (4) Tobias, Diabetes Care, Volume 34, July 2011;

SHORT AND LONG TERM HEALTH IMPACT: FUTURE PREGNANCIES AND GDM

- Recurrence in future pregnancies, with associated complications:
  - Macrosomia
  - Cesarean Delivery
  - Preterm Birth
  - Pre-eclampsia
  - Increased risk of obesity and diabetes for baby
- If woman subsequently developed T2DM and is in poor control at conception:
  - Pregnancy Loss
  - Hyperglycemia-associated birth defects (especially neural tube and cardiac)
    - HbA1c≥10% at conception associated with a 20% rate of major malformations
  - Polyhydramnios

Sources: (1) TA, Pedula KL, Schmidt MM, Mullen JA, Charles MA, Pettitt DJ. Diabetes Care 2007; 30(9): 2287-92; (2) Silverman BL, Metzger BE, Cho NH, Loeb CA. Diabetes Care 1995; 18(5).

REPRODUCTIVE LIFE PLANNING: TYPE 2 DM

- Avoid pregnancy until under glycemic control for 2-3 months (HbA1c < 6.5)
  - Assess retinopathy, renal disease and cardiac disease prior to pregnancy
- Treatment considerations if future pregnancy is desired:
  - Avoid management with ACE Inhibitors or statins
  - Metformin and insulin may be continued during pregnancy in women with PCOS, DM2 or pre-diabetes
- Potential need for higher dose of folic acid (0.8 – 1.0 mg daily) to lower increased risk of neural tube defects
  - 4.0 mg daily if a previous pregnancy was impacted by NTDs
- Contraceptive management
  - Avoid estrogen-containing contraceptive methods in women with diabetic nephropathy, retinopathy, or neuropathy

REVISIT CASE STUDY 2

- Ms. R is a 28 y/o G2P2 who entered pregnancy with a BMI of 23 and no history of glucose intolerance. She was diagnosed with GDM at 24 weeks and was managed by diet until 31 weeks GA when she was placed on Glyburide. At 36 weeks she began insulin injections. Her total gestational weight gain was 31 pounds. At 39 weeks GA, the patient had a spontaneous vaginal delivery (SVD). Neither she nor her baby had any complications. Ms. R was discharged from the hospital with a normal blood sugar. She presents at 6 weeks for her postpartum visit, is breastfeeding and wishes to discuss contraception.

Beyond the "Big 10" core components of routine postpartum care what special assessments, treatment regimens, and counseling should be included in her visit?

CASE STUDY 2
FOLLOW UP

- Test Blood Sugar with 75g 2 hour Oral Glucose Tolerance Test
  - Ms. R's OGTT results had a fasting value of 105 (elevated) and a 2-hour value of 130 (normal) - this should be repeated next year
- Discuss significance of GDM diagnosis with patient
  - Ms. R is at risk for future T2DM and for GDM in future pregnancies
- Address the "Big 10" core content for postpartum care for Every Woman
  - Pay special attention to weight retention

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CASE STUDY 2
FOLLOW UP - *Continued*

- Encourage continued breastfeeding and provide referral for lactation support
- Discuss desire for future pregnancies and provide appropriate contraception
  - Treatment considerations and preconception HbA1c goals
  - Higher dose of folic acid (0.8 mg - 1.0 mg per day)
  - Discuss contraception options, including LARC, that are safe while breastfeeding

VENOUS THROMBOEMBOLISM

VTE

CASE STUDY 3

- Ms. B is a 28 yo G1P1001 African American woman with BMI 37 who presents for postpartum follow-up after delivering a 7lb 12oz daughter 14 days ago via cesarean section. Her postpartum course was complicated by a DVT in the left lower extremity on POD#3. She has been on subcutaneous low molecular weight heparin since that day after diagnosis was confirmed with left lower extremity compression ultrasound. On review of the hospital records, it was noted that Ms. B wore inflatable compression devices and TED hose during surgery but removed them afterwards as they were "too hot". Ms. B feels better this week and is bonding appropriately with her infant and breastfeeding well.

Beyond the "Big 10" core components of routine postpartum care what special assessments, treatment regimens, and counseling should be included in her visit?

BACKGROUND AND SIGNIFICANCE: VTE

- Overall prevalence of VTE in pregnancy is low (0.025-0.1%)
  - Incidence is 4-50 times higher in pregnant vs. non-pregnant women
  - VTE risk is greatest postpartum (particularly in the first week after delivery)
  - Highest in Black women
- Physiological changes of pregnancy increase clotting: blood flow is slower, pelvic and other veins are compressed, women have decreased mobility
  - Most blood clots in pregnant women occur in the deep veins of the left leg and pelvis
  - Manifests during pregnancy or postpartum as a deep venous thrombosis (DVT) or pulmonary embolism (PE)
- PE is a leading cause of maternal mortality (9% of maternal deaths)

Source: ACOG Practice Bulletin 123, 2011; Chest, Feb 2012;141

BACKGROUND AND SIGNIFICANCE: RISK FACTORS FOR VTE

- Risk Factors
  - Pregnancy and postpartum
  - Cesarean delivery
  - Personal history of VTE
  - Increased tendency for excessive clotting known as thrombophilia**
  - Obesity
  - Hypertension
  - Smoking

**Thrombophilia: inherited (genetic) or acquired predisposition to spontaneous VTE events (not pregnancy-related)

ASSESS AND ADDRESS: VTE PREVENTION DURING HOSPITALIZATION

- VTE prophylaxis prevents VTE and reduces the maternal death rate
  - At the time of publication, uniform guidelines for in-hospital VTE prophylaxis have not yet been established
  - Information about the California Maternal Quality Care Collaborative VTE Toolkit (scheduled for release in 2017) can be found here:
    - www.cmqcc.org/projects/venous-thromboembolism-pregnancy-and-postpartum
- Options include:
  - Lower extremity inflatable compression devices placed prior to birth and left in place until woman is ambulating postpartum
  - Pharmacologic prophylaxis during hospitalization may be with unfractionated heparin (UFH) or low-molecular weight heparin (LMWH)

SHORT AND LONG TERM HEALTH IMPACT: VTE

- Short-term health impacts
  - Anticoagulants (bleeding risks)
- Long-term health impacts
  - Anticoagulants (teratogenic risk associated with use of warfarin)
  - Contraceptive choices - avoidance of estrogen-containing methods
  - Future recurrent VTE events (in the case of individuals with thrombophilia)
  - Need for anticoagulation in future pregnancies

REPRODUCTIVE LIFE PLANNING: CONSIDERATIONS FOR FUTURE PREGNANCIES

- Postpartum anticoagulation may be indicated (see table - next slide)
- There is a risk of recurrence of VTE in future pregnancies
- Women with a history of thrombosis should be evaluated for underlying causes (i.e., thrombophilia testing)
- Awareness of teratogenicity of anticoagulants (i.e., warfarin) and need to find safe alternative before next conception

Recommendations for Postpartum Prophylaxis: National Partnership for Maternal Safety

Clinical History	Postpartum Anticoagulation
Multiple prior VTE episodes Prior VTE with high-risk thrombophilia Prior VTE with acquired thrombophilia	6 week ***treatment***-dose LMW heparin or UFH
Idiopathic prior VTE Prior VTE with pregnancy or OCP use Prior VTE with low-risk thrombophilia Family history of VTE with high-risk thrombophilia High-risk thrombophilia (including acquired) Prior VTE provoked Low-risk thrombophilia and family history of VTE	6 week ***prophylactic*** LMW heparin or UFH
Low-risk thrombophilia	No treatment

Source: D'Alton ME, et al. Obstet & Gynecol. 2016; 128(4): 688-98.

REPRODUCTIVE LIFE PLANNING: VTE

- Contraception for optimal pregnancy timing to help women stabilize disease
  - Estrogen-containing birth control is contraindicated as it further increases the risk of VTE events
  - Progestin-only and LARC methods are safe options
- Women should be aware of risk of recurrence in future pregnancies
- Address modifiable risk factors
  - Weight loss
  - Smoking
- For women with inherited thrombophilias, preconception genetic counseling may assess risk to offspring

REVISIT CASE STUDY 3

- Ms. B is a 28 yo G1P1001 African American woman with BMI 37 who presents for postpartum follow-up after delivering a 7lb 12oz daughter 14 days ago via cesarean section. Her postpartum course was complicated by a DVT in the left lower extremity on POD#3. She has been on subcutaneous low molecular weight heparin since that day after diagnosis was confirmed with left lower extremity compression ultrasound. On review of the hospital records, it was noted that Ms. B wore inflatable compression devices and TED hose during surgery but removed them afterwards as they were "too hot". Ms. B feels better this week and is bonding appropriately with her infant and breastfeeding well.

Beyond the "Big 10" core components of routine postpartum care what special assessments, treatment regimens, and counseling should be included in her visit?

CASE STUDY 3 FOLLOW UP

- Address the "Big 10" core content for postpartum care for Every Woman
  - Ms. B pre-pregnancy BMI was 37. Be sure to discuss weight retention and weight loss
- Discuss significance of VTE diagnosis with patient
  - Obtain a full personal and family VTE history of Ms. B to assess whether she needs testing for inherited thrombophilias
- Continue postpartum anticoagulation
  - Consider hematology consultation
  - Use either unfractionated/low molecular weight heparins or warfarin for Ms. B
  - Encourage Ms. B to continue breastfeeding and provide referral lactation support

Continued on next slide

CASE STUDY 3
FOLLOW UP - *Continued*

- Discuss desire for future pregnancies and provide appropriate contraception
  - Educate regarding risk of VTE recurrence
  - Avoid estrogen-containing contraceptive methods
  - Educate regarding teratogenic effects of warfarin - recommend alternative anticoagulant prior to conception (i.e., heparin)
  - Consider preconception consultation with maternal fetal medicine specialist to discuss risks in pregnancy and appropriate management

ANEMIA

IRON-DEFICIENCY ANEMIA

CASE STUDY 4

- Ms. M is a 33 y/o G2P2 with a vegetarian diet who was a recreational runner prior to mid-gestation. She entered prenatal care with mild anemia. Her hematocrit level was abnormally low in the third trimester. Neither she nor her baby had any post-birth complications (i.e., postpartum hemorrhage). At delivery Ms. M initiated breastfeeding, but because of fatigue is currently considering weaning. She has also not engaged in any physical activity postpartum. She now presents at 6 weeks for her postpartum visit.

Beyond the "Big 10" core components of routine postpartum care what special assessments, treatment regimens, and counseling should be included in her visit?

BACKGROUND AND SIGNIFICANCE: ANEMIA

- Condition where the blood lacks sufficient red blood cells to carry oxygen, most commonly caused by blood loss or iron-deficiency (diet)
- Symptomatic (usual mild) condition affecting many women because of blood loss resulting from menstruation and childbirth
  - Most common symptom is fatigue
- Associated with poorer infant bonding
- Usually mild, but if untreated, consequences can be severe
  - Organ damage from lack of oxygen
  - Cardiovascular disease
  - Risk factor for future preterm/low birth weight infants

BACKGROUND AND SIGNIFICANCE: RISK FACTORS

- Risk factors for iron deficiency anemia include:
  - Recent childbirth
  - Vegetarian diet (40% of vegetarian women experience anemia)
  - Low socioeconomic status
- The risk of iron deficiency anemia is 4.1 times higher during the first 6 months postpartum and 2.1 times higher for 7-12 months postpartum than among women not recently pregnant
- Other causes of anemia include: blood loss, vitamin deficiency, underlying disease, or inherited blood diseases like thalassemia and sickle cell

ASSESS AND ADDRESS: MEDICAL HISTORY REVIEW FOR ANEMIA

- In anticipation of visit, review prenatal and intrapartum records:
  - Assess for prenatal anemia
  - Assess for intrapartum and postpartum blood loss
    - Postpartum hemorrhage is defined as any of the following:
      - >500 mL of blood loss after a vaginal birth
      - >1000 mL of blood loss after a cesarean birth
      - Blood loss sufficient to cause vital sign abnormalities or symptomatic anemia
- At visit, ask woman:
  - Did you experience any bleeding complications at the time of birth?
  - Was blood transfusion required?
  - Have you seen a medical provider or have you been to the ER since giving birth?

ASSESS AND ADDRESS: SYMPTOMS AND RISKS FOR ANEMIA

- **Signs and Symptoms of Anemia**
  - Extreme fatigue
  - Shortness of breath
  - Rapid heartbeat
  - Headache
  - Dizziness
  - Cold or tingling Hands and Feet
  - Leg cramps
  - Pica
  - Brittle nails
  - Paleness (May appear differently in patients with darker skin)

- **Anemia Risk Factors**
  - History of anemia
  - Dietary iron sources
  - Hemorrhage or blood loss during L&D or postpartum

- **Hemoglobinopathy Risk Factors**
  (screen if not responsive to treatment)
  - African, Southeast Asian, and Mediterranean ancestry
  - Family history of sickle cell disease, alpha-thalassemia, or beta-thalassemia

Refer to hematology to follow up on abnormal findings

ASSESS DISEASE STATUS: TESTING AND TREATMENT FOR ANEMIA

- Diagnosis of Anemia should include:
  - Complete Blood Count
    - Hemoglobin <110 g/L (11 g/dL)
    - Or Hematocrit <32%
  - Mean Corpuscular or Cell Volume (MCV)
    - Microcytic Anemia if <80 fL
- Treatment of Anemia should include:
  - Iron supplementation (325 mg orally twice daily for up to 3 months)
  - Counseling on dietary considerations to improve absorption (vitamin C and vitamin B12)
  - Consider IV iron for patients who can't absorb/tolerate oral therapy
  - Annual follow up screening and screening prior to pregnancy

IRON-RICH FOODS

Plant based iron (non-heme)

- Beans
- Tofu
- Lentils, nuts/seeds
- Iron-fortified cereal
- Spinach
- Raisins

Animal-based iron (heme)

- Chicken and beef livers
- Lean ground beef and top sirloin
- Turkey and chicken (especially dark meat)
- Tuna

FOODS THAT AFFECT IRON ABSORPTION

Iron Boosters – Consume with iron to increase absorption

- Vitamin C
  - Especially important for vegetarians
  - Best if consumed raw
  - Bell peppers, berries, broccoli, cauliflower, guava, melons, onion, pineapple
- Citric acid (citrus fruits)
- Beef, poultry, salmon, pork
- Folic acid and vitamin B12

Iron Inhibitors – Avoid consuming with iron

- Tea, coffee, and cocoa (tannins and polyphenols)
- Dairy (calcium)
- Legumes and whole grains (phytates)
- Egg protein

CALIFORNIA TOOLKIT
POSTPARTUM VISIT ALGORITHM

ANEMIA

Preconception Health+Health Care Initiative
A National Public-Private Partnership

Einstein Montefiore | Center for Continuing Medical Education

ACOG
THE AMERICAN CONGRESS OF OBSTETRICIANS AND GYNECOLOGISTS
District IX / CA

Postpartum Visit Algorithm: Anemia

Current signs and symptoms of anemia, e.g., malaise, light headedness or dizziness, and/or risk factors, e.g., anemia in 3rd trimester, excessive blood loss during delivery and/or multiple birth?[1]

If known sickle cell anemia, or thalassemia:
- Refer patient for a primary care or hematology evaluation if patient has sickle cell disease.
- Folic acid 400 mcg daily.[5]

Screen with CBC

Hb <11 g/dL
Hct <32[2]

Normocytic or macrocytic
MCV ≥ 80 fL

Refer to primary care provider for further testing and treatment.

Microcytic
MCV <80 fL

Anemia due to iron-deficiency. Begin treatment:
- $FeSO_4$ 325 mg PO bid for 2-3 months
- Refer to primary care provider to evaluate response and further treatment.

Normal:
Hb ≥11 g/dL
Hct ≥32

Provide education[1, 2, 3, 4]
- Encourage iron-rich foods (beef, pork, chicken, turkey, fish, beans, dark leafy greens, fortified cereals, liver).
- Counsel to consume iron-rich foods at the same time as vitamin C-rich foods to increase absorption (tomatoes, broccoli, bell peppers, oranges).
- Promote drinking water with meals to help iron absorption instead of milk, coffee, or tea, which inhibit absorption.
- If current or prior diagnosis of iron deficiency anemia or risk factors present, e.g. heavy menses, other blood loss, short interpregnancy interval or low dietary iron intake, recommend:
  - Annual screening for anemia
  - Screening for anemia prior to any future pregnancies to improve pregnancy outcomes

Ask: Do you want to have any more children? If so, when?

Recommend the ABCS:
folic A cid: A multivitamin with 400 mcg of folic acid each day.
B reastfeeding: Exclusive breastfeeding for 6 months. Breastfeeding does not prevent pregnancy.
C ontraception: Contraception options based future pregnancy intentions. See CDC Medical Eligibility Criteria for Contraceptive Use.
S pacing: Babies are born healthier when there are at least 18 months between pregnancies.

REVISIT CASE STUDY 4

- Ms. M is a 33 y/o G2P2 with a vegetarian diet who was a recreational runner prior to mid-gestation. She entered prenatal care with mild anemia. Her hematocrit level was abnormally low in the third trimester. Neither she nor her baby had any post-birth complications (i.e., postpartum hemorrhage). At delivery Ms. M initiated breastfeeding, but because of fatigue is currently considering weaning. She has also not engaged in any physical activity postpartum. She now presents at 6 weeks for her postpartum visit.

Beyond the "Big 10" core components of routine postpartum care what special assessments, treatment regimens, and counseling should be included in her visit?

CASE STUDY 4
FOLLOW UP

- Assess physical symptoms and review medical record
  - EMR states Ms. M had a vaginal delivery and abnormal hematocrit during 3rd trimester
  - During the visit Ms. M says she has discontinued breastfeeding and has not resumed her regular exercise
  - These may be symptoms of extreme fatigue that she does not recognize as abnormal for a new mom with two young children
- Obtain complete blood count test and provide appropriate iron supplementation therapy
  - Ms. M's results indicate that she is anemic and should receive 325 mg iron for 3 months and return for follow up testing if symptoms of fatigue do not diminish

Continued on next slide

CASE STUDY 4
FOLLOW UP - *Continued*

- Counsel on iron-rich foods
  - Ms. M is a vegetarian who does not consume heme iron. Discuss iron absorption boosters, emphasizing vitamin B12, and sources of non-heme iron
- Address the "Big 10" core content for postpartum care for Every Woman
  - Include the importance of resuming physical activity (recreational running) for her physical and mental health
  - Address benefits of continued breastfeeding, underscoring that neither anemia nor its treatment is a contraindication
- Discuss desire for future pregnancies and provide appropriate contraception

MODULE SUMMARY

KEY POINTS AND RESOURCES

KEY MESSAGES

- The postpartum visit is an excellent opportunity to begin follow up care for women with maternal complications and to continue care for women with chronic disease
- The postpartum visit may be the first of several health care visits that a woman receives to restore her health after pregnancy and prevent long term health consequences
- A plan for ongoing management of chronic disease and risk abatement strategies should be included in the discussion of future pregnancy with each woman
- Addressing chronic disease or a maternal complication may be the most important postpartum need, however, all women should receive structured comprehensive postpartum care that addresses the “Big 10” and is individualized to the woman

THIS MODULE IS A START…

- These are not the only conditions identified in pregnancy that have future health implications and require follow up at the postpartum visit
- Pregnancy can reveal vulnerability for many other diseases
- Postpartum care must include:
  - Timely identification of disease risks
  - Evidence-based interventions to prevent or delay onset of chronic conditions
  - Referrals, when indicated, for coordinated and timely follow-up
  - Patient education about the impact of conditions on her health and on any future pregnancies she may have

SOURCES FOR CARE RECOMMENDATIONS

We recommend consulting the following resources for clinical care guidance:

- Interconception Care Project of California: http://everywomancalifornia.org/postpartumvisit
- California Maternal Quality Care Collaborative Toolkits: https://www.cmqcc.org/resources-tool-kits/toolkits
- National Preconception Care Clinical Toolkit: http://beforeandbeyond.org/toolkit
- ACOG Practice Bulletins: http://www.acog.org/Resources-And-Publications/Practice-Bulletins-List