Pre-Conception "& Interpregnancy" Care

Preconception Counseling

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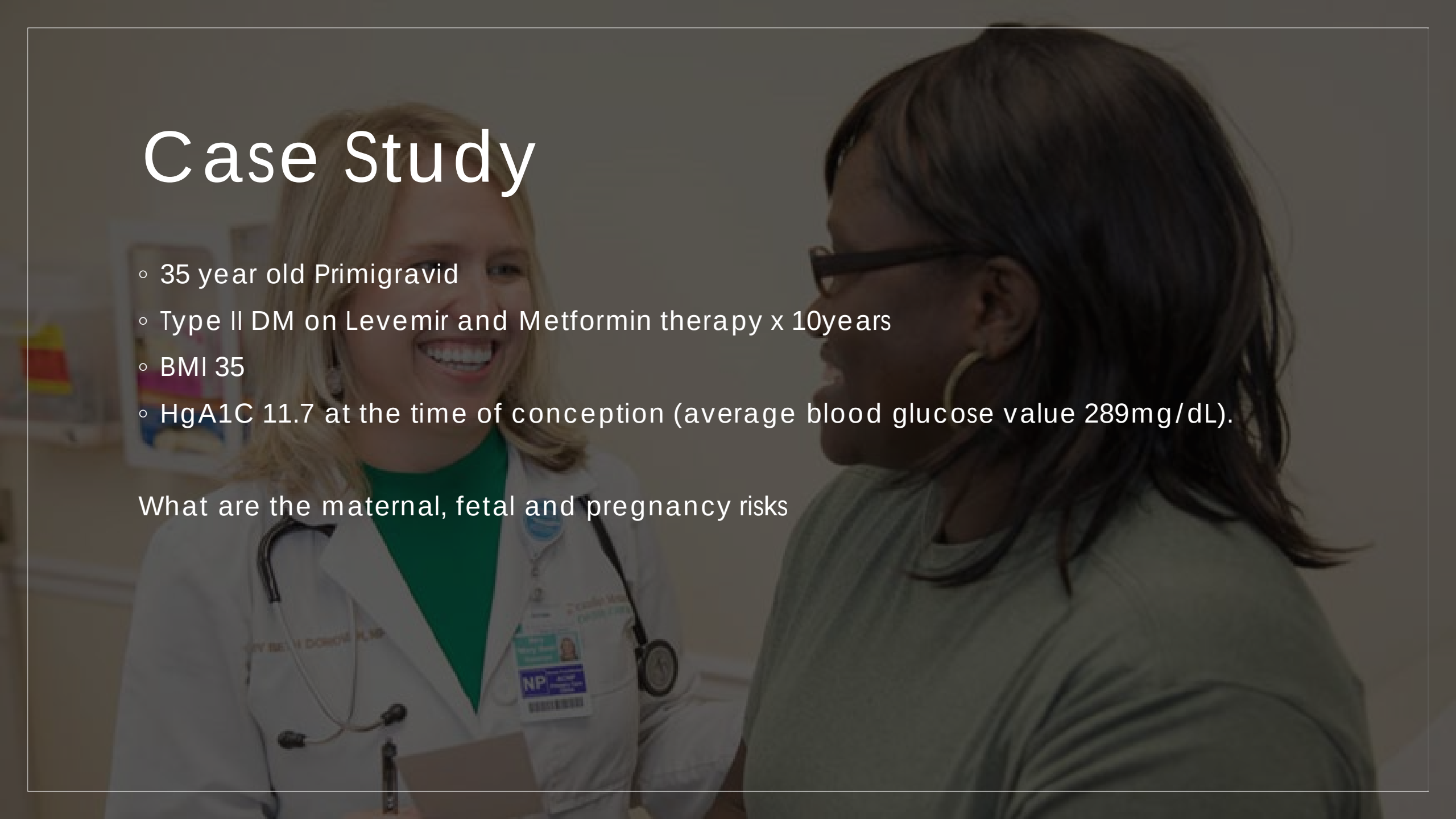
Case Study

- 35 year old Primigravid
- Type II DM on Levemir and Metformin therapy x 10years
- BMI 35
- HgA1C 11.7 at the time of conception (average blood glucose value 289mg/dL).

What are the maternal, fetal and pregnancy risks



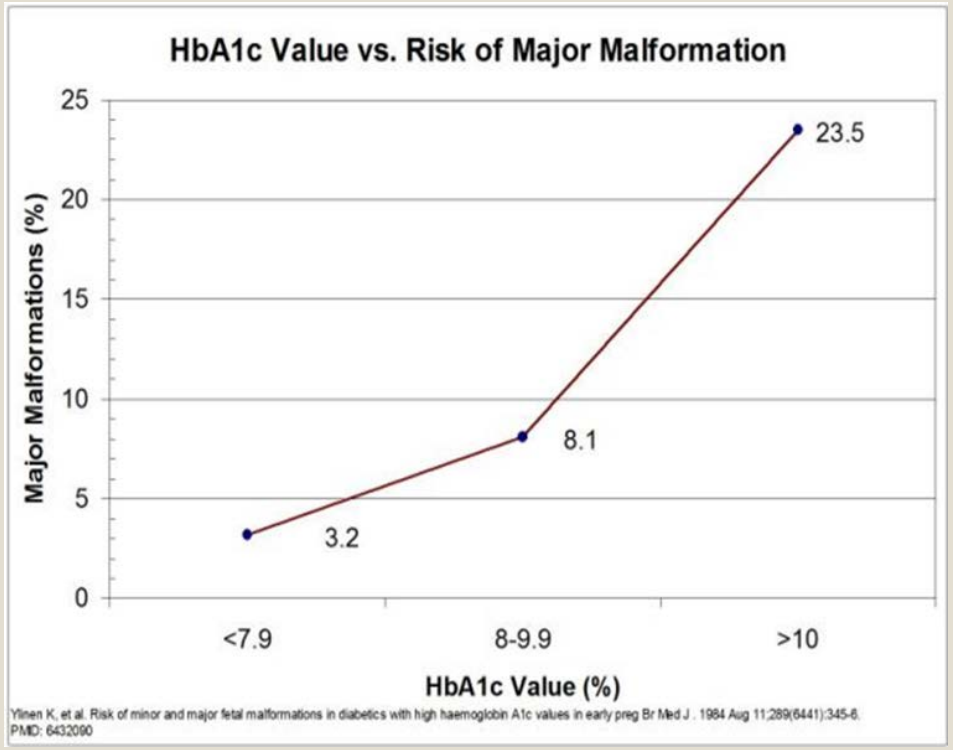
Case Study

Maternal and Pregnancy Risk

	Non-diabetic %	Diabetic (GDM) %
Pre-eclampsia	8	12
Stillbirth	5.7	10.4 (4.7)
Neonatal mortality	4.7	12.2 (3.3)
Macrosomia	10	25-42
Shoulder Dystocia	5-7	31
Anomalies	2-3	7-9

Maternal-Fetal Medicine 1999;4th Ed: 964-995.

Fetal risks for congenital anomalies



Diabetic Embryopathy

- Incidence 6-10% (vs 3% in general pop)
  - Related to HbA1c

Anomaly	Risk Ratio	Percent Risk
Cardiac Defects	18x	8.5%
VSD		
Transposition of great vessels		
Hypoplastic left heart		
CNS Anomalies	16x	5.3%
Anencephaly	13x	
Spina Bifida	20x	
Holoprosencephaly		
Caudal Regression		
All Anomalies	8x	18.4%

Adapted from Becerra JE, Khoury MJ, Cordero JF, Erickson JD. Diabetes mellitus during pregnancy and the risks for specific birth defects: a population based case-control study. Pediatrics. 1990;85:1–9

Possible preconception counseling pearls

- Decrease risk of congenital birth defect from **23.5%** (due to her HgA1C of 11.7 at the time of conception/organogenesis) to that of the general population risk of **3%** should HgA1C less than 7.9 have been achieved.
- Begin high dose Folic Acid supplementation of **4 mg** as opposed to **400 mcg.**
- Medication optimization and transition
- Education regarding need for initiation of low dose baby Aspirin to decrease risk of pre-eclampsia during pregnancy.
- Improve BMI to more normal range
- AMA and genetic counseling

- What if she had preexisting vascular disease, i.e. retinopathy? Cardiovascular disease? Renal disease?

Pregnancy & Interpregnancy Care

- Recommended by ACOG, CDC, SMFM, WHO and other national organizations
- Initiated in an effort to identify modifiable risk factors present in an effort to improve changes of having a healthy pregnancy and baby.
- Per ACOG *The goal of preconception care is to reduce the risk of adverse health effects for the woman, fetus, or neonate by optimizing the woman's health and knowledge before planning and conceiving a pregnancy.*
- Per SMFM: *Interpregnancy care is the care provided to women of childbearing age who are between pregnancies with the goal of improving outcomes for women and infants*

Goals of Pre-Conception & Interpregnancy Care

1

Identify risks to mother, fetus, and pregnancy

2

Educate about these risks, options for intervention and management to reduce risks, reproductive alternatives

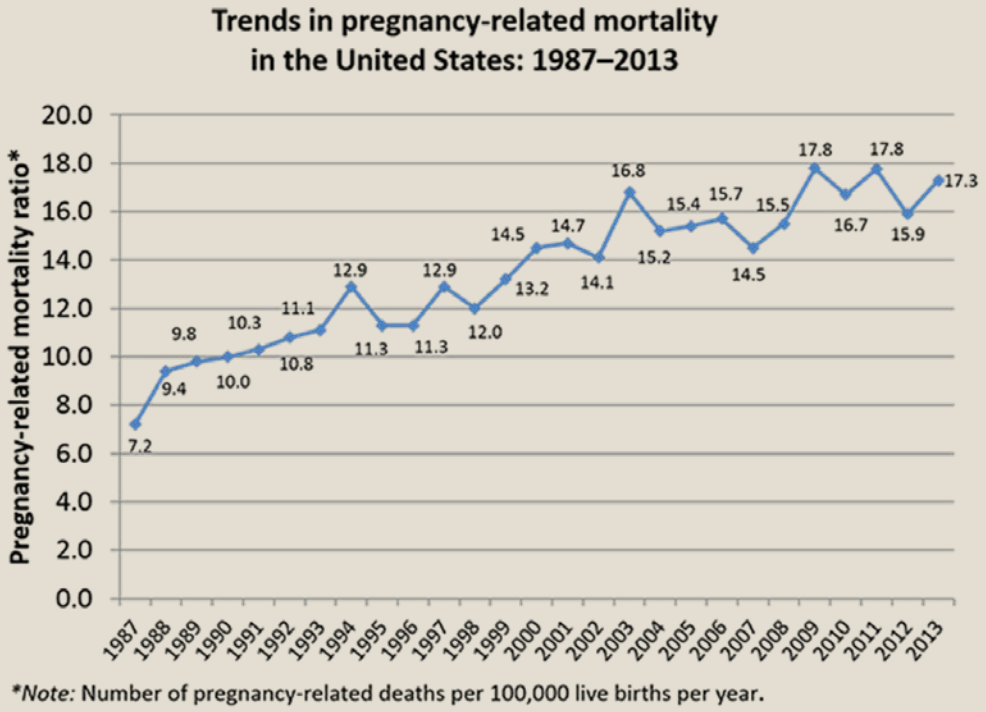
3

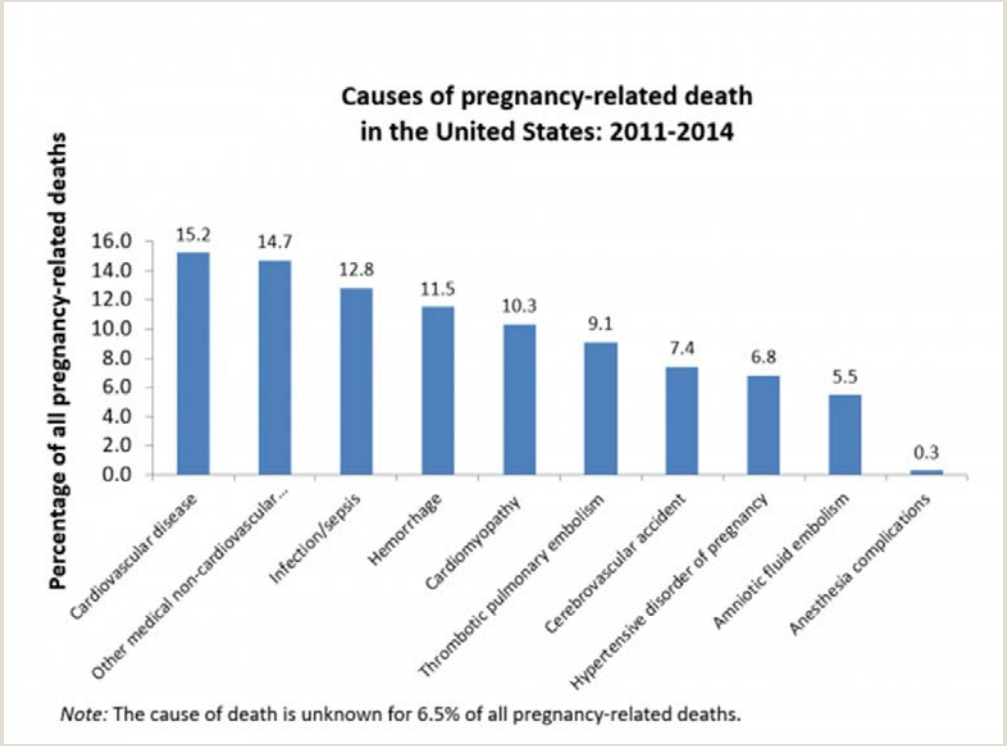
Initiate interventions to provide optimum maternal, fetal and pregnancy outcomes

Why do we care?

Maternal mortality has been increasing since 1987

Associated with increasing rates of BMI, chronic conditions such as cardiovascular disease and diabetes, delayed child bearing, and inadequate prenatal and postnatal care





Creanga. Pregnancy-Related Mortality in the United States. *Obstet Gynecol 2017*.

www.cdc.gov/reproductivehealth/maternalinfanthealth/pregnancy-mortality-surveillance

Risk of adverse fetal outcome based upon Maternal Condition

TABLE Risk of antepartum stillbirth based on maternal condition

Condition	Prevalence	Stillbirth risk (per 1,000 births)
All pregnancies		6.4
Chronic hypertension	6%–10%	6–25
Maternal diabetes		
Diet controlled	2.5%–5%	6–10
Insulin	2.4%	6–35
Cholestasis	<0.1%	12–30
Previous stillbirth	0.5-1%	9–20
Advanced maternal age		
35–39 years	15%–18%	11–14
40 years	2%	11–21

Source from: Stubblefield. The clinical context of preconception care: reproductive history. Am J Obstet Gynecol 2008.

Preconception History

- Chronic medical conditions
- Medications
- Interpregnancy Intervals
- Genetic conditions and family history
- Reproductive history
- Substance use
- Nutrition and weight management
- Environmental hazards and toxins
- Infectious diseases and vaccinations
- Social and mental health concerns

Preconception Intervention

- Folic acid supplementation
- Glycemic control, screening for diabetes, evaluation for and treatment of proliferative retinopthy
- Abstinence from substance use
- Reduction to BMI
- Medications optimization and changes
- Avoidance of environmental teratogens
- Chronic medical issues optimatization
- Up to date vaccinations
- Behavioral changes to reduce risk for acquiring infections

Associated Risks

Infertility	Fetal growth issues
Miscarriage	Ectopic Pregnancy
Fetal growth issues/Low birth weight	Teratogenicity/Fetal anomalies
Gestational HTN /Preeclampsia	Gestational diabetes/diabetes
Stillbirth/neonatal mortality	Uterine rupture/blood transfusion
Preterm rupture of membranes/Preterm delivery	Thromboembolic events
Cesarean delivery	Maternal morbidity i.e. long term health effects
Neonatal morbidity	Developmental delay/psychomotor effects

Life-Long Health Concerns

Gestational Diabetes	Seven fold increase risk of developing Type 2 DM (up to 50-60% within 10-15years)
Gestational HTN	Increased risk for CHTN 2 fold increase risk of cardiovascular disease
Preeclampsia	2 fold increase risk of subsequent cardiovascular disease
Renal Disease	Worsening of renal function, transplant
Cardioviovascular	Leading cause of maternal mortality
Obesity	Increased risk for DM, HTN, stillbirth, cesarean delivery

"Because reproductive capacity spans almost 4 decades for most women, optimizing women's health before pregnancy and between pregnancies is an ongoing process that requires assess to and the full participation of the health care system."

-ACOG

Thank you!

References

- Becerra JE, Khoury MJ, Cordero JF, Erickson JD. Diabetes mellitus during pregnancy and the risks for specific birth defects: a population based case-control study. Pediatrics. 1990;85:1–9
- Creanga AA et al. Pregnancy-related mortality in the United States, 2006-2010. Obstet Gynecol 2015;125:5-12.
- Creasy and Resnik's Maternal–Fetal Medicine: Principles and Practice Seventh edition. Obstetric Medicine.
- ACOG Obstetric Care Consensus #8. Interpregnancy Care. Obstet Gynecol January 2019; 133.
- ACOG Committee Opinion No 762. Prepregnancy Counseling. Obstet Gynecol 2019;133.
- ACOG Committee Opinion No 736. Optimizing Postpartum care. Obstet Gynecol 2018; 131.
- American Academy of Family Physicians. Preconception care (Position Paper). Leawood (KS): AAFP; 2016.
- https://www.cdc.gov/preconception/planning.html.