

Preconception = pre pregnancy preparation



WHAT CAN WE DO BETTER?

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Prepregnancy preparation



- Define maternal risks – surgical, preeclampsia
- Define fetal risks- aneuploidy, anomalies, prematurity
- How does a chronic illness such as hypertension, diabetes or asthma affect the pregnancy?
- How will the pregnancy affect mom's chronic disease state?

Prepregnancy conditions which should be considered



- Hypertension
- Diabetes
- Obesity
- Asthma
- Hyperthyroidism, hypothyroidism
- Epilepsy
- Prior preterm birth
- Prior poor outcome

Prepregnancy conditions to consider



- **Anti-phospholipid antibody syndrome**
- **Thrombophilias**
- **Lupus, other autoimmune conditions**
- **Cardiovascular disease**
- **IVF patients who are advanced maternal age**
- **Genetics /family history**
- **Psychiatric disorders, depression, anxiety , bipolar disorder- need for meds vs. risks for fetus**

Prepregnancy consultation



- **Anemia-** rule out hemoglobinopathy, sickle cell trait, thalassemias, etc.
- **Cervical insufficiency-** need early care to have cerclage at optimal time

Hypertension



- **Discontinue ACE inhibitor prior to conception**
 - **Safe medications**
 - ✦ Labetalol, alpha methyldopa, calcium channel blockers such as nifedipine
 - ✦ **AVOID** atenolol, category D, may use when a cardio selective Beta blocker is absolutely required. Inderal may be a better choice.
 - ✦ Renal biopsy to diagnose nephritis, nephropathy if etiology is unclear
 - ✦ Baseline 24 hour urine for protein creatinine and creatinine clearance, renal ultrasound at some point in work- up for all women with chronic hypertension and pregnancy

Hypertension



- Hypertension goal of treatment B/P 140/90's
- Will see normal decrease in 2nd trimester and then normal increase in 3rd trimester
- We try not to completely normalize B/P in pregnancy.
- Often we see lower numbers when the patient is at rest.
- Following a B/P log is ideal , with values reviewed from the patient's home

Hypertension



- **Baseline EKG and maternal echocardiogram if left ventricular hypertrophy is noted**
- **Discussion regarding increased risk for preeclampsia during gestational age of extreme prematurity < 28 weeks gestation.**
- **Discuss need for close follow- up during pregnancy, following fetal growth every 3- 4weeks. Non – stress tests for fetal surveillance beginning typically at 32 weeks. Let the patient know what they are getting into, need to have strong commitment to the pregnancy.**
- **Reiterate the need for close follow- up**

Autoimmune disease



- Activity of disease in 6 months prior to pregnancy predicts activity of disease during gestation.
- In many cases preconception baby ASA and heparin are helpful in lowering recurrence for miscarriage and poor outcome. Patients with these conditions need to be seen with a positive pregnancy test to initiate therapy at 5-6 weeks when an intrauterine pregnancy is identified.

Patients with prior preterm birth



- Patients with prior preterm birth are in the group which we can actually offer therapy to attempt to lower risk for subsequent preterm birth
- Encouraging patients to enter into prenatal care early is critical
- Patients should be informed about the positive things we can do in trying to prevent recurrent preterm birth

Prior preterm birth



17 alpha - hydroxyprogesterone caproate 250mg weekly from 16-20 weeks until 36 weeks gestation. Lowered preterm birth recurrence by 30%.

Encouraging patients to seek preventative care and early prenatal care is key

(NEJM Jan 2003, Meis et al)

Prior preterm birth



- **Preterm prediction study – sequential cervical length and fetal fibronectin testing NICHD- MFM units network**
 - 3076 pregnancies ; 2929 singleton and 147 twin gestations
 - 24 and 28 week gestation
 - Measured cervix defined normal as greater than 25 mm and short as less than 25 mm
 - Short cervix and fetal fibronectin positive were greatest risk factors for preterm delivery.

AM J of OB/Gyn 2000 march Goldenburg et al.

Obesity and stillbirth



- **NEJM Jan 1998**
 - 167,000 women in Sweden 1992-1993
 - BMI >30 was obese, 25-29 overweight
 - Normal BMI was 20-24.9
 - ✦ Normal BMI had an OR for fetal death of 2.2 CI (1.2- 4.1)
- **OR 3.2 in overweight women 95% CI (1.6- 6.2)**
- **OR 4.2 in obese for stillbirth 95% CI (2.0 -9.3)**

obesity



- **Increased surgical risks associated with morbidly obese patients-**
 - Pulmonary embolism
 - DVT
 - Wound infection
 - Cesarean section
 - Difficulty in placing regional anesthesia, difficulty with intubation

obese patients, BMI > 40.



- Uterine compression, poorly controlled diabetes, preeclampsia are all risks associated with elevated BMI and pregnancy loss.
- Increased risk for uterine rupture with prior cesarean delivery and attempted VBAC in obese patients = 2.1% vs. 0.4% in BMI 25 group/
 - ✦ Hibbard et al, Obstet Gynecol Jul 2006

Obesity and increased risk for stillbirth



- **BJOG 2005**
 - 2 fold increased risk for stillbirth if BMI was greater than 30.
 - This increased risk was present even when stratified for other risk factors.
 - Uteroplacental causes were suspected

Metabolic syndrome in childhood



- Intrauterine exposure to diabetes and fetal macrosomia are risk factors for type 2 diabetes later in life
- The association between metabolic syndrome in childhood is only recently described.

Risk for metabolic syndrome at ages 6,7,9 was 15 % if child was LGA at birth and mother was diabetic

✦ Pediatrics 2005 March ; Boney et al

Diabetes



- Patients poorly controlled on oral agents need to start insulin –goal HG A1c <6%
- Need fasting to be less than 95 and 2 hour post prandial levels less than 120.
- Referral for insulin pump initiation may be more beneficial for type 1 patients especially prior to pregnancy
- Eye exam for poorly controlled patients to rule out diabetic retinopathy

Diabetes



- Patients taking oral agents – will need insulin during gestation
- No data at this time to support sustained oral agents in pre-existing diabetes, only with true gestational diabetics
- Many patients we see at 24 weeks with an abnormal GTT, are really preexisting and were just not picked up until 24-28 weeks. Their fetuses are at increased risk for congenital anomalies dependent on the Hg A 1 c levels.

Diabetes



- Third trimester stillbirths can occur prior to the glucose tolerance test being performed, When macrosomic fetuses are noted at 28 weeks, we know this has been a long standing problem for this patient. High risk patients should have 1 hr GTT at Ob intake.
- Increased risk for the fetus to develop diabetes later in life
 - Hyperinsulinemia in utero predisposed fetus for CVD, Diabetes and metabolic syndrome
 - ✦ (Alpha- Omega theory)

Thyroid dysfunction



- **Goal for TSH to be in the 1-2 mIU/L range**
 - Regardless of free T4 level.
 - Undertreated hypothyroidism has been linked to an increased risk for poor neurodevelopmental outcome.
 - (NEJM 2003)
 - Even when the TSH is in the normal range, pregnancy requires an average of 30% more thyroid hormone (NEJM, 2003)

Hypothyroidism



- **Obstetricians need to check TSH levels every 8-10 weeks during pregnancy**
- **May have patients double dose on Mondays and Thursdays each week to achieve TSH goal**

Hyperthyroidism



- **Best treated prior to pregnancy**
- **95% is due to Graves disease**
 - Thyroid stimulating immunoglobulin are IgG and may cross the placenta, over stimulating the fetal thyroid leading to fetal goiter.
 - Fetal growth restriction and tachycardia may result
 - PTU – propylthiouracil may be utilized in pregnancy, however this drug can also cross placenta leading to fetal hypothyroidism

Epilepsy



- Need neurology evaluation prior to contemplating pregnancy
- Many pregnant patients are treated with teratogenic drugs when they have had greater than 2 year seizure free interval, suggesting candidacy for withdrawal
- Try to achieve monotherapy if withdrawal appears too risky

Epilepsy- monotherapy



- Oral facial clefts
 - Heart defects
 -
 - Neural tube defects
- ALL MAY BE REDUCED
WITH FOLIC ACID
SUPPLEMENTATION**
- Lamictal 8.9 /1000 risk for oral-facial clefts compared to background risk of 1-2/1000.

Epilepsy in pregnancy



- Seizures can cause fetal brain injury and fetal death, don't stop the meds!!!
- >1 seizure /month prior to pregnancy , 50% recurrent seizures in pregnancy
- No good predictors for who will have exacerbation other than activity prior to conception

Epilepsy



- Risk for fetal demise is noted to be IUFD 14% with epilepsy vs. 2-7 % in general population
- Preconception patients should take 2-4mg of folic acid up to 7 weeks gestation
- 56th post conceptional day heart brain and spine and face has completed development.
- 7th completed week, you can reduce folic acid

Drug use



- Referral for appropriate programs preconception is ideal.
- Usually patients don't seek preconceptional care when there is a drug problem.
- Addressing concerns and addiction medicine referral or rehab is suggested when problem is recognized

Tobacco abuse



- Smoking is well known to be associated with increased risk for placental abruption, first trimester loss, growth restriction
- For newborn, we see increased risk for SIDS, ear infections, respiratory complications in smoking homes.
- Quitting prior to pregnancy is ideal
 - ✦ Smokefree families NIH

Folic acid



- All women of child bearing age should consume at least 0.4 mg of folic acid per day. Non-epileptic population
- Risks of open spina bifida in general population is 1-2 /1000 . Risk with valproic acid is 1-2% or 1-2/100. consuming 2-4 mg of folic acid per day lowers risk to background risk of 1-2/1000.

AMA- advanced maternal age



- Patients should be informed of increased risk for aneuploidy associated with IVF and multiple pregnancy
- Increased risk over age 35, particularly in over 40 group

asthma



- Peak flow assessment
- Goal for treatment of asthma is to have stable asthma with peak flow within 80% of baseline after B2 agonist treatment
- Need to balance stability of asthma against concerns for class C medications
- Chronic diseases such as asthma are linked with increased risk for intrauterine growth restriction – corticosteroids may also be helpful if maintenance is required

Psychiatric medications



- **Concern about discontinuing SSRI medications (selective serotonin reuptake inhibitors)**
 - Patients with severe anxiety and depression need to have lengthy discussion prior to conception about the severity of their disease, and weigh risks and benefits of discontinuing
 - 1-2% risk of congenital heart defects, 1% pulmonary hypertension in the newborn, neonatal withdrawal
 - ✦ Studies were flawed in that the study was retrospective- newborns with pulmonary hypertension were reviewed to see if any were exposed to SSRI medications
 - ✦ Risk for pulmonary hypertension in the newborn was 1% with SSRI medications. Potential medico legal fallout as a result of this study. Problem is that this really does not make sense physiologically.

SSRI medications



- **Primary pulmonary hypertension in the newborn**
 - 5HT is circulating serotonin- promotes vascular smooth muscle contraction
 - SSRI -actually binds 5HTT serotonin transporter protein, therefore decreases vascular smooth muscle tone.
 - Many problems with this study- need to consider the 70% relapse rate for depression if we discontinue the med

Psychiatric disorders



- Am J of Psychiatry -June 2006 (Vancouver study)
- Maternal medication usage during gestation was not associated with long term behavioral problems, however maternal behavioral issues did have a direct effect on childhood behavior at age 4 and 5.

Post partum



- **Diabetes- 75 gm glucose challenge**
- **Post partum depression screen- Edinburgh scale**
 - 10 on scale is going to pick up 95% of patients affected.
 - Omaha Healthy Start program (J Natl Med Assoc Mar 2007)
 - ✦ 17 % of population was identified as having depression with Edinburgh scale

Summary



- Ask the question of all women of child bearing age :
 - **Is there a chance you could be pregnant now or may become pregnant within the next year?**
 - ✦ If yes- having a checklist of high risk pregnancy conditions as above may be helpful to reiterate to patient need for early intake into prenatal care.
 - ✦ We may see this as part of a best practices recommendation in the future.
 - ✦ Folic acid supplementation recommendations may become a pay for performance issue just like cholesterol screening and other preventative health care initiatives.
 - ✦ Thank You!!!!