HEALTHCARE PROVIDER GUIDE TO PRECONCEPTION CARE

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What is Preconception Care?

- A set of interventions that identify and modify medical, behavioral, and social risks to a woman’s health and future pregnancies
- Target population is women of childbearing age

Why now?

- The two leading causes of infant mortality in the US are congenital anomalies and preterm deliveries/low birth weight babies
- Despite medical advances adverse pregnancy outcomes remain a problem and are relatively immune to prenatal care
**Infant Death Rate Trends**

*2001-2004*

Healthy People Goal 2010
Reduce to no more than 4.5 per 1,000 live births
Source: Michigan Department of Community Health

**Saginaw County Trends**

Rates are per 1,000 live births
Source: Michigan Department of Community Health
CRITICAL PERIODS OF DEVELOPMENT
(RED DENOTES HIGHLY SENSITIVE PERIODS)

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<th>embryonic period (in weeks)</th>
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central nervous system

heart
arms
eyes
legs
palate
teeth
external genitalia
ear
prenatal death
major morphological abnormalities
physiological defects & minor morphological abnormalities
usually not susceptible to teratogens
Components of Preconception Care

- Diet & Exercise
- Medication/Drugs
- Women’s Health
- Home Environment
- Lifestyle
- Medical History
- Genetics
**Diet & Exercise: Weight Issues**

- **Underweight (BMI <18.5)**
  - Increased risk for low birth weight baby, preterm birth and fetal death
  - Monitor closely for adequate weight gain

- **Normal weight (BMI 18.5-24.9)**
  - Monitor for 25-35 pound weight gain in pregnancy

- **Overweight (BMI 25-29.9) & Obese (BMI >30)**
  - Maternal Implications include increased risk of preeclampsia, gestational diabetes, cesarean delivery & post partum infection
  - Fetal Implications include increased risk of neural tube defects, birth trauma & late fetal death

- **In 2003 20-30% of Michigan women ages 18-44 considered obese**
  - Source: CDC

**Diet & Exercise: Heavy Metals**

- Monitor for lead & mercury ingestion/exposure risk

- Exposure to high levels before or while pregnant can lead to serious birth defects and lifelong behavior/learning problems
Medications: Folic Acid

- B vitamin
- Works **only** if taken before conception and during the early prenatal period
- Recommend ALL women who could become pregnant take 400 micrograms of Folic Acid everyday
- Benefits include:
  - Decrease risk of birth defects
  - Decrease risk of chronic diseases
  - Decrease risk of some cancers
  - Decrease risk of cognitive disease development

Medications: Retinoids

- Family of drugs related to Vitamin A
- When taken during pregnancy can cause miscarriage or very serious birth defects
- Drugs included: Accutane, Soriatane, Vesanoid, and Targretin
- Vitamin A excess increases risk of birth defects also

Medications: Anti-Seizure Medications

- Valproic acid (depakote, depakene) antiseizure medicine used to treat seizures, migraines, and bi-polar disorder
- Linked to birth defects
- Recommend consider changing medicine or lowering dose
**Medications: Ace Inhibitors**

- Used to treat chronic hypertension
- Common names: Catopril & Vasotec
- Associated with fetal anomalies especially is used during second & third trimesters
- Recommend switching to different drug, such as Lopressor or Labetalol.

**Medication: Over The Counter Medications**

- **Anti-Inflammatory Drugs**
  - Increase risk of birth defects; especially of the heart

- **Salicylates**
  - Increase risk of maternal or fetal hemorrhage
  - Prolonged gestation & labor
  - Increase risk of low birth weight

- **Herbal Supplements**
  - Safety unknown, recommend not using
Medications: Anti-Depressants

- High incidence of mental illness Saginaw County; Depression & Bi-Polar disorder
- Women can take Anti-Depressants while pregnant
- Need to weight the risk vs. benefit with each case
- Depression affects approximately 2 out of every 10 pregnant women

SSRI’s (Selective Serotonin Uptake Inhibitors)
- Newer drugs, presumed to be somewhat safer
- Paxil use within first 3 months increase risk of heart defects
- Babies born to women taking may exhibit “withdrawl” type symptoms
- May cause preterm delivery

TCA’s (Tricyclic Anti-Depressants)
- May cause increase risk of preterm delivery

NEVER abruptly stop use of medication
Women’s Health

- Previous birth outcomes
  - A prior poor birth outcome is at risk for subsequent event

- DES “daughter” increased risk for
  - CCA (clear cell adenocarcinoma)
  - Reproductive tract structural differences
  - Ectopic pregnancy
  - Pre-term delivery
  - Infertility
  - Source: CDC

Women’s Health: Sexually Transmitted Infection’s

- 15 million contract an STD each year
- 75% of those women are symptom free
- CDC recommendation is that ALL pregnant women be screened

Estimated number of pregnant women in the U.S. who are infected with specific sexually transmitted infection each year.
Source: CDC, 2006
Saginaw County Chlamydia Rates 2005

Source: Michigan Department of Community Health 2005
Women’s Health: Sexually Transmitted Infection’s

- **Bacterial Vaginosis**
  - Almost double risk of preterm birth & low birth weight

- **Chlamydia**
  - Bacterial infection
  - Maternal Implications
    - Fertility problems
    - Increased risk of miscarriage & premature rupture of membranes
    - Increased risk preterm birth
  - Baby Implications
    - Increased risk of infection during vaginal delivery

- **Trichomoniasis**
  - Parasitic infection
  - Untreated lead to premature rupture of membranes & preterm birth

- **Genital Herpes**
  - Virus can pass to infant
  - Widespread implications from infection

- **Gonorrhea**
  - Bacterial infection
  - Maternal risk of miscarriage, preterm birth & premature rupture of membranes
  - Fetal risk of infection of eye’s

- **Syphilis**
  - Bacterium crosses placenta
  - Without treatment in pregnancy fetal or infant death in 40% cases

- **HIV**
  - Recommend all pregnant women receive counseling and HIV testing
  - With treatment risk of transmission to fetus 2%
  - Without treatment risk of transmission to fetus increases to 25%
SAGINAW COUNTY GONORRHEA RATES 2005

Source: Michigan Department of Community Health 2005
Home Environment

- Stress and low socioeconomic status increases risk of preterm birth
- Physical & emotional abuse
  - Increase risk of preterm birth
  - Maternal/fetal injury and/or death
- Recommendation: screen all women for need of referral support systems

Home Environment: Toxoplasmosis

- Parasitic infection
  - Found in raw or undercooked meat & cat feces
- 400 – 4,000 babies infected every year in U.S.
- Maternal/Fetal Implications
  - Increased risk of miscarriage, preterm birth or stillbirth
  - Severe infection at birth
  - Mental retardation
  - Impaired eyesight
  - Cerebral palsy
  - Seizures
  - Learning disabilities
  - Hearing loss
- Recommendations
  - Screen for infection
  - Antibiotic treatment
  - Prevention
    - Do not consume undercooked or raw meat
    - Don’t empty cat’s litter box
    - Wear gloves when gardening

Home Environment: Baby Safety

- Screen for need of safety equipment (car seat, crib)
- Refer to community resources if needed
**Lifestyle: Tobacco Use**

- 11% women smoke during pregnancy
- **Maternal Implications**
  - Double risk of placental problems
  - Increase risk of premature rupture of membranes
- **Fetal Implications**
  - Low birth weight
  - Fetal growth is slowed
  - Increase risk preterm birth
  - Risk of withdrawal symptoms
  - 3 x’s more likely to die from Sudden Infant Death Syndrome than non-smoking counterparts
  - Appears to be correlation more mother smokes the higher the risk’s to herself & baby

**Lifestyle: Alcohol Use**

- Up to 40,000 babies are born each year with some degree of alcohol related affect
- Heavy, moderate, & light drinking can cause harm
- No level of alcohol during pregnancy has been proven safe
- About 13% of pregnant women drink during their pregnancy
- **Fetal Implications**
  - Mental retardation
  - Learning, emotional & behavioral problems
  - Birth defects of the heart, face & organs
  - Increase risk of miscarriage, low birth weight & stillbirth
- **Fetal Alcohol Syndrome (FAS)**
  - One of the most common causes of mental retardation
  - ONLY cause that is preventable
  - Effects last a lifetime
  - **Characteristics of FAS babies**
    - Low birth weight
    - Characteristic facial features
    - Heart defects
    - Brain dysfunction
- **Fetal Alcohol Effects**
  - Occurs three times more often than FAS
  - **Fetal Implications**
    - Physical or mental birth defects
**Lifestyle: Cocaine Use**

- Use early in pregnancy
  - Increased risk of miscarriage
- Maternal/Fetal Affects
  - Preterm labor & delivery
  - Intrauterine growth retardation
  - Birth defects
    - Urinary tract
    - Heart
  - Increased risk of stroke
  - Placental abruption
  - Withdrawal symptoms
  - Feeding/sleep difficulties

**Lifestyle: Marijuana Use**

- Maternal/Fetal Affects
  - Low birth weight
  - Preterm birth
  - Withdrawal
  - Decreased fertility risk in both men and women

**Lifestyle: Amphetamines**

- Maternal/Fetal Affects
  - Increased risk of birth defects
    - Heart
    - Clubfoot (females)
    - Cleft palate
  - Maternal hypertension
    - Intrauterine growth retardation
    - Preterm birth
    - Excessive bleeding
  - Withdrawal
  - Lifelong learning, behavior & memory problems
**Lifestyle: Heroin Use**

- Maternal/Fetal Implications
  - High risk for:
    - Miscarriage
    - Placental abruption
    - Premature rupture of membranes
    - Intrauterine growth retardation
    - Preterm birth
    - Stillbirth
    - Low birth weight
    - Sudden Infant Death Syndrome

**Lifestyle: Dental Disease**

- Periodontal Disease Link
  - Past 10 years studies show an association between gum disease & preterm birth
  - Account for 18% of preterm birth
  - Bacteria from gum infection produce toxins which trigger systemic inflammatory response
  - Recommendation: preconception planning include visit to dentist

**Lifestyle: Hot Tub & Sauna Use**

- During early prenatal period (0-12 weeks)
  - Increase risk of miscarriage
  - Increase risk of Neural Tube Defects related to hyperthermia
Medical History: Diabetes

- 1 in 200 women have diabetes before pregnancy
- Higher incidence in African American and Hispanic/Latino population
- The rate of major congenital anomalies varies from 0-5% for women who receive preconception care to 10% for women who do not receive preconception care (source: FDA)
- Baby risks
  - Large size
  - Increased risk of breathing difficulties
  - Low blood sugar
  - Jaundice
  - Future risk of obesity & diabetes as young adult
- Maternal risks
  - Miscarriage
  - Hypertension
  - Polyhydramnios
  - Preterm birth
  - Still birth
- Women at risk for gestational diabetes: >30 yrs. of age, are obese, family history, previous history of gestational diabetes, history of large baby, stillborn baby and ethnicity
- Recommendations:
  - Switch from oral agents to insulin for tighter control of blood sugar levels
  - Review dietary modifications
**Medical History: Hypertension (HTN)**

- Chronic Hypertension is defined as BP >140/90
- HTN disorders among leading causes of maternal mortality
- African American women have higher incidence of Chronic Hypertension
- Mild Chronic Hypertension well controlled has minimal impact on pregnancy
- Maternal risks for poorly controlled Chronic Hypertension
  - Increase risk of developing Gestational Hypertension
  - Congestive heart failure
  - Kidney failure
  - Cerebral hemorrhage
  - Placental abruption
  - Blood clot disorders
- Fetal Risks of poorly controlled Chronic Hypertension
  - Intrauterine growth retardation
  - Preterm birth
  - Still birth
  - Oligohydramnios
- Recommendations
  - If using ace inhibitor for control consider switching to a beta blocker such as Lopressor or Labetalol
  - Review diet modifications

**Medical History: Hypothyroidism**

- There is a relationship between thyroid level in mother & brain development in fetus
- Untreated hypothyroidism can cause intellectual impairment in fetus
- Fetal thyroid gland does not begin to function until 12 weeks gestation
- Recommendations
  - Screen all women of childbearing age prior to becoming pregnant for thyroid disease
  - Frequently monitor blood levels for adequate T4 level prior to conception and during pregnancy
Medical History: Hyperthyroidism

- Onset common in younger women
- Risk of untreated hyperthyroidism
  - Miscarriage
  - Difficulty getting pregnant
  - Congenital anomalies
  - Preterm birth & low birth weight
  - Stillbirths
- Recommendations
  - Achieve control of condition prior to conception
    - Surgery
    - Radioactive iodine therapy **NOT** safe in pregnancy
    - Medication PTU (propylthiouracil) preferred choice

Medical History: Mental Illness

- Most common conditions
  - Depression
  - Bi-polar disorders
  - Anxiety disorders
- Need to weigh risk/benefit ratio
- Recommendations
  - Use of SSRI’s instead of TCA’s
  - Do not use benzodiazepines & lithium during first trimester
  - Discontinue medications (if possible)
  - Explore alternative therapies (counseling, group therapy etc.)

Medical History: Immunity Status

- Recommend titer screening for following:
  - Rubella
    - Presence of maternal antibodies protect fetus from congenital rubella syndrome
    - Congenital rubella syndrome (CRS) occurs when a women contracts rubella during the first trimester of pregnancy
    - CRS can result in serious birth defects
      - Malformations of the heart (PDA), eyes or brain
      - Deafness & mental retardation
      - Spleen, liver or bone marrow problems
  - Hepatitis B
    - Screen for presence of Hepatitis B surface antigen & treat accordingly
    - Hepatitis B is transmitted during birth via blood or feces
    - Infant risks associated with viral exposure
      - Development of chronic Hepatitis B infection
      - Liver cirrhosis
      - Liver cancer
Medical History: Immunity Status Continued

- Chicken Pox
  - Screen for presence of antibodies
  - Greatest risk period for exposure is 8-20 weeks gestation
  - Fetal infection can cause a pattern of birth defects referred to as varicella embryopathy

Genetics

- 120,000 babies in the US are born with a birth defect
- Birth defects are the leading cause of death in the first year of life
- Causes:
  - Environmental
  - Genetics
  - Combination of both

- Indications for screening
  - Maternal age >35
  - Previous child with genetic disorder
  - Family history of genetic conditions
  - Repeated miscarriages
  - Ethnic background specific diseases

- Cystic Fibrosis
  - One of the most common inherited disease in Caucasians
  - 3% -10% carry the defective gene

- Sickle Cell Disease
  - 1 in 10 African American women may be a carrier
  - Recommend screening any women with African American ancestry for carrier status

- Thalassemia
  - Affects people of Greek, Italian, Mediterranean or southern Asia descent
  - 3% of world population carry the gene
Genetics Continued

- **Tay Sachs**
  - Fetal disease of central nervous system
  - Affects American Jews, French Canadians and some people in the Louisiana Cajun population

- **Additional familial associations**
  - Down syndrome
  - Muscular Dystrophy
  - Mental retardation
  - Autism
  - Neural tube defects
  - Hemophilia
For Additional Information....

- March of Dimes
  - www.marchofdimes.com
- Centers for Disease Control & Prevention
  - www.cdc.gov
- US Department of Health & Human Services
  - The Office of Minority Health
    - www.hhs.gov

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