Reproductive Health

Northwest Children’s Environmental Health Forum—2013

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Pre-conception considerations

• The parental environment
  ▪ Social environment
  ▪ Nutrition
  ▪ Chemical environment
  ▪ Built environment—home, community
• General parental health
• Egg and sperm quality
• Collectively, these influence successful fertilization, implantation, and the uterine environment
Pregnancy outcome, Childhood health, illness

Adult health, illness

Cardiovascular disease
Diabetes
Cancer
Dementia
Etc.
Fetal susceptibility

• Unique biological events > unique windows of vulnerability
• Development of brain, immune system, endocrine system, reproductive system can be altered by environmental exposures during fetal development, infancy, or childhood;
• Multiple mechanisms; e.g., endocrine/signaling disruption, epigenetic changes, direct toxicity
• Timing of exposures matters, along with amount (dose) and duration
Manifestations of abnormal development

- Fetal death
- Pre-term birth, low birth weight; e.g. maternal smoking, air pollution, some pesticides, nutrition
- Birth defects; e.g., pesticides, solvents (study challenges)
- “Functional” abnormalities; e.g., neurodevelopment; reproductive, immune, respiratory systems, etc.
- Cancer; leukemia and maternal pesticide exposures, paternal exposure to carcinogens (inconsistent evidence)
- Increased susceptibility to adult disease
Environmental chemicals

• Encountered at work, home, community, diet
• Pre-conception concerns:
  ▪ Chemicals with long half-lives (e.g. PBTs)
  ▪ Constant, repetitive exposures (e.g. air pollution, drinking water and food contaminants)
  ▪ Chemicals that impair egg or sperm quality, disrupt implantation
• During pregnancy: numerous reproductive, developmental toxicants; e.g., CA Prop 65
• Pharmaceuticals—including OTC
Nutrition

- Protein, fruits and vegetables, healthy fats, low glycemic carbohydrates
- Adequate vitamins, minerals—folate, iodine, vitamin D, zinc, etc.
- Impacts on fetal growth and development, metabolic set points, epigenetic markers, disease risk throughout life (Barker, DOAD)
- *Nutrition During Pregnancy* (ACOG)
Social stressors

- Acute and chronic
- Altered levels of stress hormones, markers of inflammation, immune system function
- Consequences: low birth weight, preterm birth; increase the risk of other adverse outcomes in combination with other stressors at personal and community levels
One Tool for Conducting an Environmental History: CH₂OPS

Community
Home/Hobbies
Occupation/School
Personal
Socioeconomic