Reproductive Health

Northwest Children's Environmental Health Forum—2013

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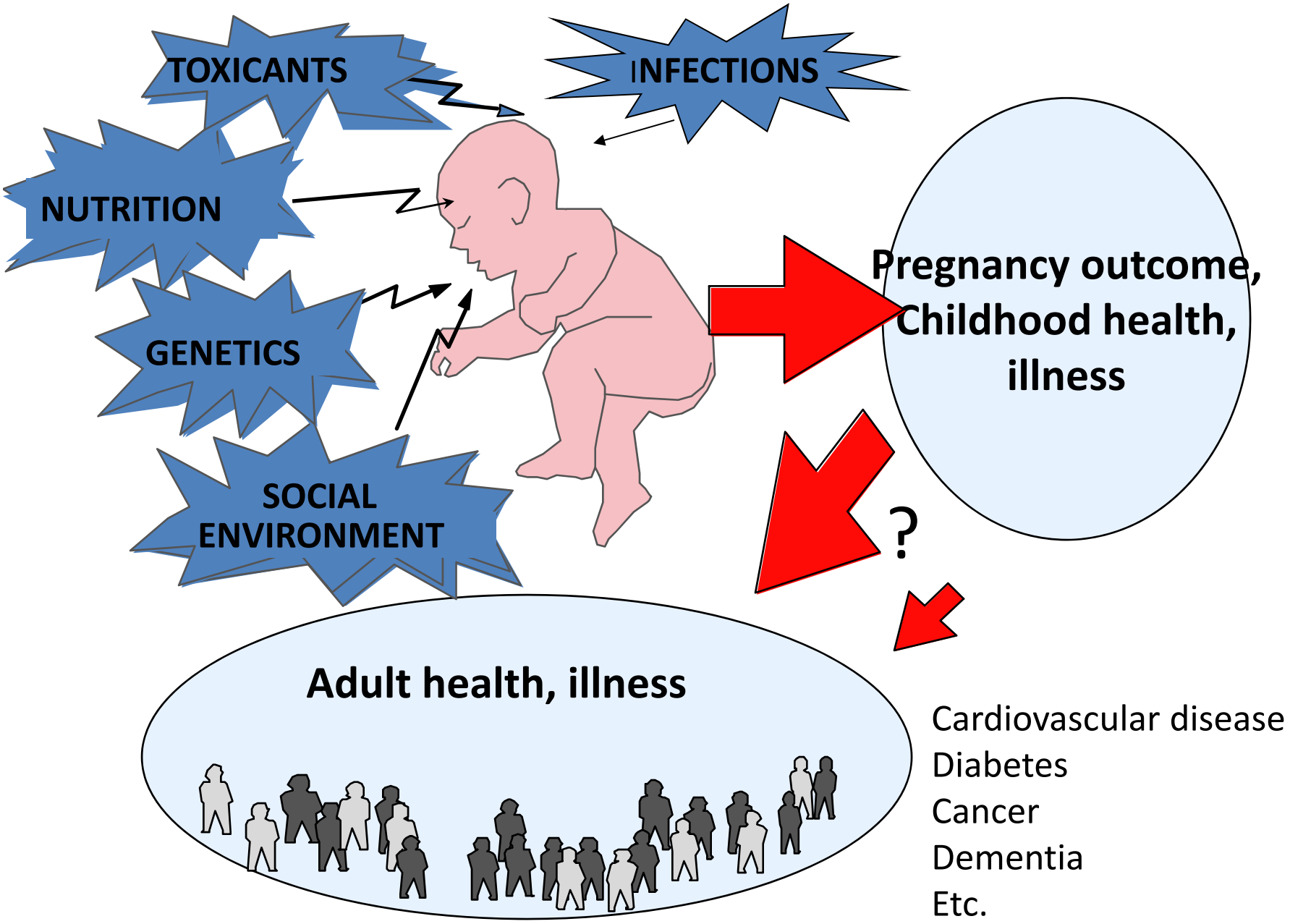
Pre-conception considerations

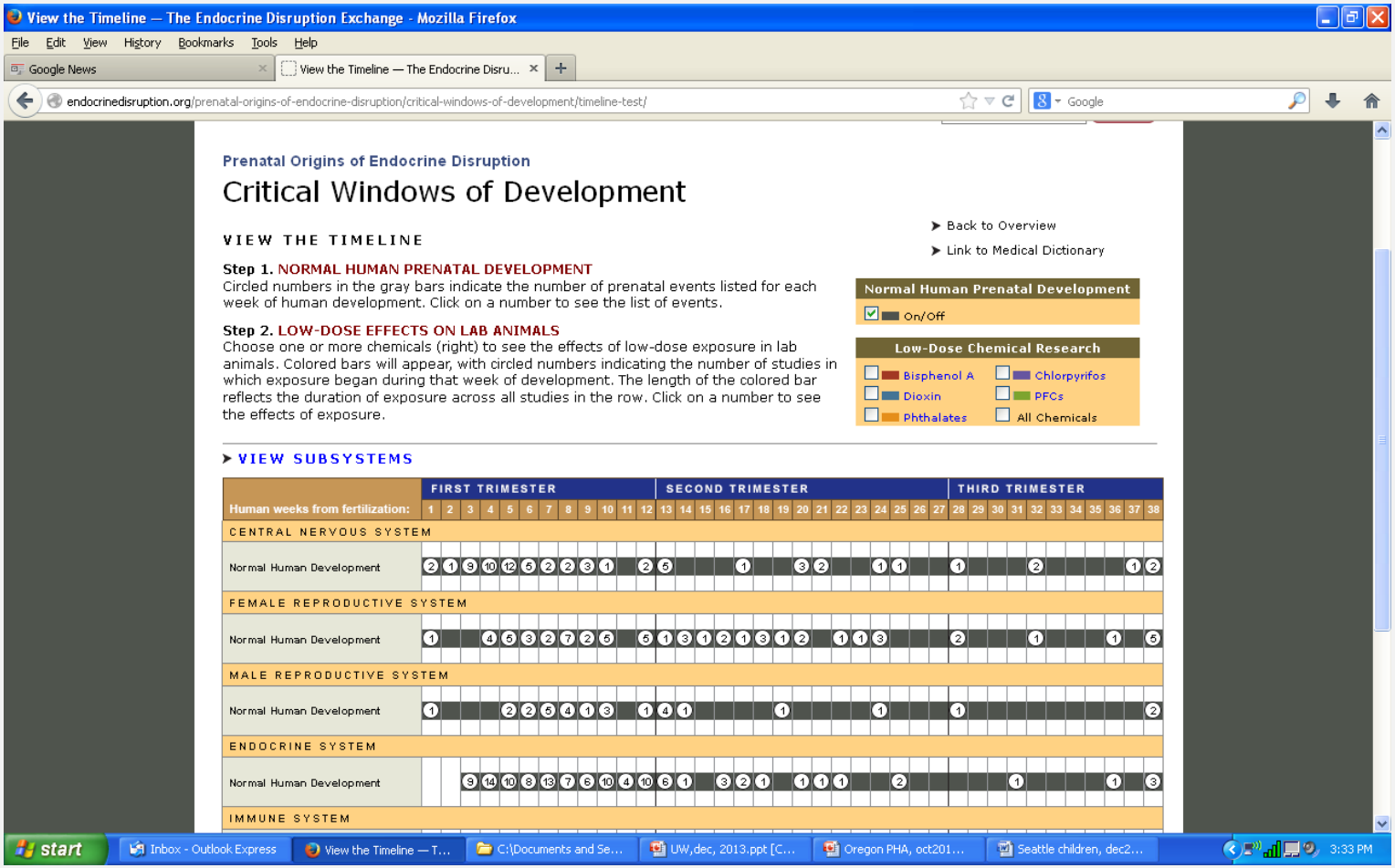
- The parental environment
  - Social environment
  - Nutrition
  - Chemical environment
  - Built environment—home, community
- General parental health
- Egg and sperm quality
- Collectively, these influence successful fertilization, implantation, and the uterine environment


TOXICANTS
INFECTIONS
NUTRITION
GENETICS
SOCIAL 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

The Endocrine Disruptor Exchange—TEDX Critical Windows of Development



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

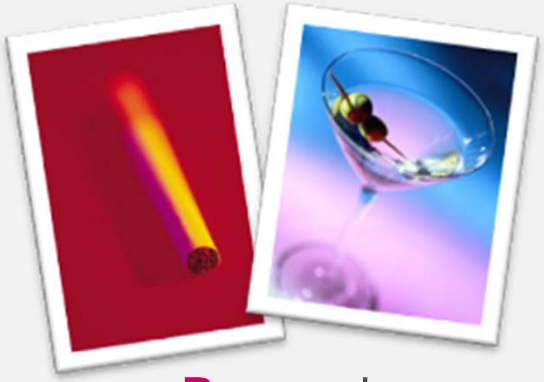
- Acute and chronic
- Altered levels of stress hormones, markers of inflammation, immune system function
- Consequences: low birth weight, preterm birth; increase the risk of other adverse outcomes in combination with other stressors at personal and community levels

One Tool for Conducting an Environmental History: CH_2OPS

Community

Home/**H**obbies

Occupation/ School



Personal

Socioeconomic