Adverse Exposure to the Fetus

Objectives

- Explain how exposure to environmental toxicants during pregnancy can affect fetal development and lead to adverse health outcomes across a lifetime
- Describe the role of epigenetics, in fetal development and how environmental exposures can lead to epimutations
- Identify placenta-dependent and placenta-independent pathways through which environmental toxicants reach the fetus
- Assess strategies to minimize maternal and fetal exposure to environmental toxicants

Content Outline

1. Overview of Fetal Vulnerability to Environmental Toxicants
2. Epigenetics and Developmental Origins of Health and Disease (DOHaD)
3. Role of Epigenetics in Phenotypic Changes and Epigenetic Transgenerational Inheritance
4. Types of Fetal Exposure
   - A. Preconceptual
   - B. Concurrent exposures during pregnancy
   - C. Placental pathways of fetal exposure
5. Specific Environmental Toxicants
   - A. Cigarette smoke
   - B. Ethanol
   - C. Pesticides
   - D. Bisphenols (BPA, BPS, BPF)
   - E. Phthalates
   - F. Organic solvents
6. Fetal Pharmacokinetics and Impact of Maternal Physiologic Changes
7. Prevention Strategies
   - A. Dietary changes
   - B. Occupational safety
   - C. Lifestyle adjustments

Reading Material Resources

Module WB2747: Adverse Exposure to the Fetus is based on the resource listed below. A copy of the resource is included with the module.

Chapter 13 Adverse Exposures to the Fetus, Fanaroff & Martin's Neonatal Perinatal Medicine, Martin et al., Elsevier, 2025, 240-258