

### Risk Reduction

- Despite complexity, most babies are born healthy
- Most hazards are avoidable
- Teratology —study of birth defects
  - teratogens—broad range of substances that can cause environmental insults that may cause prenatal abnormalities or later learning abilities

Determining Risk - Risk analysis involves the weighing of factors that affect likelihood of teratogen causing harm

### Prenatal Development Part II: Things That Can Go Wrong

- Risk Reduction
  - Teratology
- Determining Risk
  - Timing of exposure
  - Amount of exposure
  - Genetic vulnerability
  - Specific Teratogens
- Low Birth Weight
- Birth/Neonatal Assessment

#### 1. Timing of Exposure

- Critical period—in prenatal development, the time when a particular organ or other body part is most susceptible to teratogenic damage
  - entire embryonic period is critical

#### 2. Amount of Exposure: Dose and/or frequency

- Threshold effect—teratogen relatively harmless until exposure reaches a certain level
- Interaction effect—risk of harm increases if exposure to teratogen occurs at the same time as exposure to another teratogen or risk

#### 3. Genetic Vulnerability

- Genetic susceptibilities: product of genes combined with stress
- Folic-acid deficiency may cause neural-tube defects
  - occurs most commonly in certain ethnic groups and less often in others
- Males are more genetically vulnerable

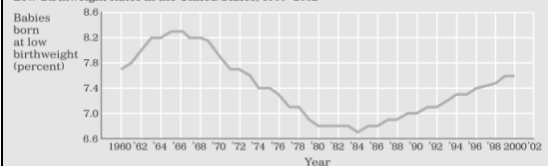
#### 4. Specific Teratogens

- No way to predict risk on an individual basis
- Research has shown possible effects of most common and damaging teratogens
- AIDS and alcohol extremely damaging

### Low Birthweight

- Low Birthweight (LBW)
  - less than 5 1/2 lbs. (more common than 10 years ago)
    - grows too slowly or weighs less than normal
    - second most common cause of neonatal death
- Preterm
  - birth occurs 3 or more weeks before standard 38 weeks
- Small for Gestational Age (SGA)
  - maternal illness
  - maternal behavior
    - cigarette smoking (25% of SGA births)
  - maternal malnutrition
    - poorly nourished before and during pregnancy
    - underweight, undereating, and smoking tend to occur together

Low-Birthweight Rates in the United States, 1960–2002



Source: U.S. Bureau of the Census, 2002; Martin et al., 2002.

## The Birth Process

- Hormones in mother's brain signals process
- Contractions begin: strong and regular at 10 minutes apart
  - average labor for first births is 8 hours

## The Newborn's First Minutes

- Assessment—Apgar scale
  - five factors, 2 points each
    - heart rate
    - breathing
    - color
    - muscle tone
    - reflexes
  - score of 7 or better: normal
  - score under 7: needs help breathing
  - score under 4: needs urgent critical care

TABLE 4.5 Criteria and Scoring of the Apgar Scale

Score	Color	Heartbeat	Reflex Irritability	Muscle Tone	Respiratory Effort
0	Blue, pale	Absent	No response	Flaccid, limp	Absent
1	Body pink, extremities blue	Slow (below 100)	Grimace	Weak, inactive	Irregular, slow
2	Entirely pink	Rapid (over 100)	Coughing, sneezing, crying	Strong, active	Good; baby is crying

Source: Apgar, 1953.

## Mothers, Fathers and a Good Start

- Strong family support
  - may help wives abstain from drugs or alcohol
  - can reduce maternal stress
- Parental alliance—commitment by both parents to cooperate in raising child
  - helps alleviate postpartum depression
- Parent-infant bond—strong, loving connection that forms as parents hold, examine, and feed their newborn
  - immediate contact not needed for this to occur