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Twelfth Edition

Child Development

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*Power Point slides prepared by Leonard R. Mendola, Ph.D.
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Prenatal Development and Birth Chapter 3 Outline

Prenatal Development

- The Course of Prenatal Development
- Teratology and Hazards to Prenatal Development
- Prenatal Care
- Normal Prenatal Development

Birth

- The Birth Process
- Assessing the Newborn
- Low Birth Weight and Preterm Infants

The Postpartum Period

- Physical Adjustments
- Emotional and Psychological Adjustments
- Bonding

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Chapter 3 Preview

This chapter chronicles the truly remarkable developments from conception through birth.

Imagine . . . at one time you were an organism floating in a sea of fluid in your mother's womb. Let's now explore what your development was like from the time you were conceived through the time you were born.

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Prenatal Development (cont.)

The Course of Prenatal Development

- Prenatal development:
 - lasts approximately 266 days
 - begins with fertilization
 - ends with birth
 - is divided into three periods:
 - germinal
 - embryonic
 - fetal

Prenatal Development (cont.)

The Course of Prenatal Development (continued)

The Germinal Period

- takes place in the first 2 weeks after conception
- includes the creation of the fertilized egg (*zygote*), cell division, and the attachment of the zygote to the uterine wall
- begins with rapid cell division by the zygote

Prenatal Development (cont.)

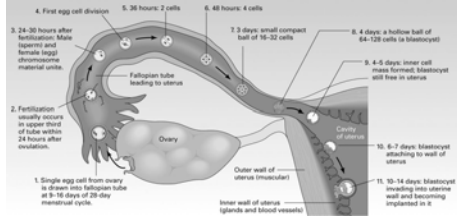
The Course of Prenatal Development (continued)

The Germinal Period (continued)

- Differentiation of cells takes place.
- Cells, now called the *blastocyst*, consists of an inner mass of cells that will eventually develop into the embryo.
- **Trophoblast:** an outer layer of cells that later provides nutrition and support for the embryo
- **Implantation:** the attachment of the zygote to the uterine wall; takes place about 10 to 14 days after conception

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The Course of Prenatal Development

Some of the Most Significant Developments During the Germinal Period



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Prenatal Development (cont.)

The Course of Prenatal Development (continued)

The Embryonic Period

- occurs from 2-8 weeks after conception
- rate of cell differentiation intensifies
- support systems for cells form and organs appear
- blastocyst attaches to uterine wall
- mass of cells is now called an *embryo*

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Prenatal Development (cont.)

The Course of Prenatal Development (continued)

The Embryonic Period (continued)

- 3 layers of cells form:
 - **Endoderm:** inner layer of cells that will develop into the digestive and respiratory systems
 - **Ectoderm:** outermost layer, becomes the nervous system and brain, sensory receptors (ears, nose, and eyes), and skin parts (hair and nails)
 - **Mesoderm:** middle layer, becomes the circulatory system, bones, muscles, excretory system, and reproductive system
- Every body part eventually develops from these 3 layers.

Prenatal Development (cont.)

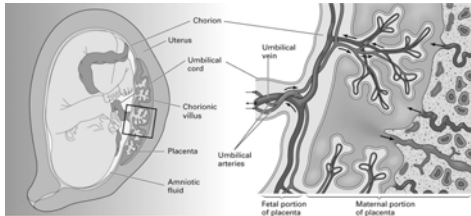
The Course of Prenatal Development (continued)

The Embryonic Period (continued)

- Life-support systems develop:
 - **Amnion:** bag or envelope containing clear fluid in which the developing embryo floats
 - **Umbilical cord:** contains two arteries and one vein; connects the baby to the placenta
 - **Placenta:** disk-shaped group of tissues in which small blood vessels from mother and offspring intertwine but do not join

The Course of Prenatal Development

The Placenta, the Umbilical Cord, and the Blood Flow in the Expectant Mother and Developing Organism



Prenatal Development (cont.)

The Course of Prenatal Development (continued)

The Embryonic Period (continued)

- By the time most women know they are pregnant, the major organs have begun to form.
- **Organogenesis:** name given to the process of organ formation during the first 2 months of prenatal development
 - While they are being formed, the organs are especially vulnerable to environmental changes.

Prenatal Development (cont.)

The Course of Prenatal Development (continued)

The Fetal Period

- begins 2 months after conception and lasts for about 7 months
- growth and development continue their dramatic course
- fetus is about 3 inches long and weighs about 3 ounces
- By the end of the 4th month, the mother can feel arm and leg movements.

Prenatal Development (cont.)

The Course of Prenatal Development (continued)

The Fetal Period (continued)

- By the end of the 5th month, the fetus is about 12 inches long and weighs close to 1 pound.
- structures of skin have formed (toenails and fingernails)
- fetus more active, showing preference for a particular position in the womb

Prenatal Development (cont.)

The Course of Prenatal Development (continued)

The Fetal Period (continued)

- By the end of the 6th month, the fetus is about 14 inches long and has gained another 1/2 pound to 1 pound.
- eyes and eyelids completely formed
- fine layer of hair covers the head
- grasping reflex present
- irregular breathing movements occur

Prenatal Development (cont.)

The Course of Prenatal Development (continued)

The Fetal Period (continued)

- At about 7 months, the fetus is *viable*; it has a chance of surviving outside of the womb
- By the end of the 7th month, the fetus is about 16 inches long and now weighs about 3 pounds.

Prenatal Development (cont.)

The Course of Prenatal Development (continued)

The Fetal Period (continued)

- During the last 2 months of prenatal development, fatty tissues develop, and the functioning of various organ systems (heart and kidneys) increases.
- During the 8th and 9th months, the fetus grows longer and gains substantial weight—about another 4 pounds.
- At birth, the average American baby weighs 7 ½ pounds and is about 20 inches long.

The Course of Prenatal Development

An Overview of the Main Events During Prenatal Development

First trimester (Week 1-12)		
Prenatal period:	4 weeks:	12 weeks:
<ul style="list-style-type: none"> • Is less than 1 1/2 inch long • Beginning development of major organs: heart, stomach, intestines, liver, and lungs • Amniotic sac surrounds the developing embryo of cells • Is called a "zygote" 	<ul style="list-style-type: none"> • Is just over 1 inch long • Face is becoming visible, usually, and limbs, hair, and fingernails are forming • Hair is beginning to grow • Kidneys are already able with ultrasound to be called the "kidneys" 	<ul style="list-style-type: none"> • Is about 3 inches long and weighs about 1 pound • Can see the arms, legs, and genital area • Fingernails are present • Can smile, frown, suck, and swallow • Sex is distinguishable • Can breathe • Weighed a "pound"
Second trimester (Weeks 13-28)		
Prenatal period:	16 weeks:	28 weeks:
<ul style="list-style-type: none"> • Is about 2 1/2 inches long and weighs about 1 1/2 lb • Head and neck are growing • Start to hear, distinguish sounds • Strong hair growth • Fingernails and toenails are forming • Hair concentration increases, as the hair starts to fall out on the scalp 	<ul style="list-style-type: none"> • Is about 12 inches long and weighs about 1 1/2 pounds • Fingernails is visible • Can see the face • Can hear • Hair, eyebrows, eyelashes, and toenails are present 	<ul style="list-style-type: none"> • Is about 14 inches long and weighs 3 1/2 pounds • Sex is visible if you cannot tell at 16 weeks • Can see the face, mouth, and hand • Hair is growing
Third trimester (Week 29-40)		
Prenatal period:	32 weeks:	36 to 40 weeks:
<ul style="list-style-type: none"> • Is about 18 inches long and weighs about 5 pounds • Is fully formed • Is very active • Reflexive movements are present 	<ul style="list-style-type: none"> • Is 18 1/2 to 19 inches long and weighs 6 1/2 pounds • Hair patches of shiny and dark hair • Responds to sounds • Can squeeze the birth canal • Bones of head are soft and flexible • Hair is being shed in hair 	<ul style="list-style-type: none"> • Is 19 to 20 inches long and weighs 8 1/2 pounds • Sex is best identified • Nervous system is active • Lunges to breathe • Is fully active • Is gaining tremendous strength

Prenatal Development (cont.)

The Course of Prenatal Development (continued)

The Brain

- By the time babies are born, they have approximately 100 billion neurons, or nerve cells, which handle information processing at the cellular level in the brain.
- basic architecture of the human brain-assembled during the 1st 2 trimesters of prenatal development

Prenatal Development (cont.)

The Course of Prenatal Development (continued)

The Brain (continued)

- The 3rd trimester of prenatal development and the 1st 2 years of postnatal life are characterized by connectivity and functioning of neurons (Nelson, Thomas, & de Haan, 2006).
- The nervous system begins forming as a long, hollow tube located on the embryo's back.
- This pear-shaped *neural tube*, which forms at about 18-24 days after conception, develops out of the ectoderm.

The Course of Prenatal Development

The Nervous System Still Has a Tubular Appearance 6 Weeks After Conception.



Prenatal Development (cont.)

The Course of Prenatal Development (continued)

The Brain (continued)

- **Anencephaly** and **spina bifida**: birth defects related to failure of neural tube to close
- In a normal pregnancy, once the neural tube has closed, a massive proliferation of new immature neurons begins to take place about the 5th prenatal week and continues throughout the remainder of the prenatal period.
- **Neurogenesis**: generation of new neurons

Prenatal Development (cont.)

The Course of Prenatal Development (continued)

The Brain (continued)

- **neuronal migration**:
 - occurs at approximately 6-24 after conception (Cooperus & Nelson, 2006).
 - involves cells moving outward from point of origin to appropriate locations and creating the different levels, structures, and regions of the brain (Hepper, 2009)
 - Once a cell has migrated to its target destination, it must mature and develop a more complex structure.

Prenatal Development (cont.)

Teratology and Hazards to Prenatal Development

General Principles

- **Teratogen**: any agent that can potentially cause a birth defect or negatively alter cognitive and behavioral outcomes
- word comes from the Greek word *tera*, meaning "monster"
- **Teratology**: field of study that investigates the causes of birth defects

Prenatal Development (cont.)

Teratology and Hazards to Prenatal Development

(continued)

General Principles (continued)

- Teratogens include:
 - drugs
 - incompatible blood types
 - environmental pollutants
 - infectious diseases
 - nutritional deficiencies
 - maternal stress
 - advanced maternal and paternal age
 - environmental pollutants.

Prenatal Development (cont.)

Teratology and Hazards to Prenatal Development

(continued)

General Principles (continued)

- The dose, genetic susceptibility, and the time of exposure to a particular teratogen influence both the severity of the damage to an embryo or fetus and the type of defect.
 - The greater the *dose* of an agent, such as a drug, the greater the effect.
 - *Genetic Susceptibility*: the type or severity of abnormalities caused by a teratogen is linked to the genotype of the pregnant woman and the genotype of the embryo or fetus (Lidral & Murray, 2005)

Prenatal Development (cont.)

Teratology and Hazards to Prenatal Development

(continued)

General Principles (continued)

- *Time of Exposure*: Teratogens do more damage when they occur at some points in development than at others (Nava-Ocampo & Koren, 2009; Rifas-Shiman & others, 2006).
- Damage during the germinal period may even prevent implantation.
- embryonic period generally more vulnerable than fetal period

Prenatal Development (cont.)

Teratology and Hazards to Prenatal Development

(continued)

Psychoactive Drugs

- act on the nervous system to alter states of consciousness, modify perceptions, and change moods:
 - caffeine
 - alcohol
 - nicotine
 - illegal drugs such as cocaine, marijuana, and heroin (Alvik & others, 2006)

Prenatal Development (cont.)

Teratology and Hazards to Prenatal Development

(continued)

Psychoactive Drugs (continued)

- Caffeine
 - 2 cups of coffee or 2-3 cans of cola per day increase risks for spontaneous abortion and low birth weight (Fernandez & others, 1998)
 - Pregnant women who consumed 300 or more milligrams of caffeine a day had an increased risk of fetal death (Matijasevich & others, 2006).

Prenatal Development (cont.)

Teratology and Hazards to Prenatal Development

(continued)

Psychoactive Drugs (continued)

- Alcohol
 - Heavy drinking by pregnant women can be devastating to offspring (Shankaran & others, 2009).
 - **Fetal alcohol syndrome (FAS):** cluster of abnormalities that appears in offspring of mothers who drink alcohol heavily during pregnancy

Prenatal Development (cont.)

Teratology and Hazards to Prenatal Development

(continued)

Psychoactive Drugs (continued)

- **Fetal alcohol syndrome (FAS)** (continued)
 - abnormalities include:
 - facial deformities
 - defective limbs, face, and heart
 - Most of these children are below average in intelligence, and some are mentally retarded (Abel, 2006).

Prenatal Development (cont.)

Teratology and Hazards to Prenatal Development

(continued)

Psychoactive Drugs (continued)

- **Alcohol** (continued)
 - Even drinking just 1-2 servings of beer/wine or 1 serving of hard liquor a few days a week can have negative effects on the fetus.
 - The U.S. Surgeon General recommends that *no* alcohol be consumed during pregnancy.

Prenatal Development (cont.)

Teratology and Hazards to Prenatal Development

(continued)

Psychoactive Drugs (continued)

- **Nicotine**
 - Cigarette smoking by pregnant women can adversely influence prenatal development, birth, and postnatal development (Noakes & others, 2009; Slykerman & others, 2009).
 - Preterm births and low birth weights, fetal and neonatal deaths, respiratory problems, and sudden infant death syndrome (SIDS) are all more common among the offspring of mothers who smoked during pregnancy (Roza & others, 2009).

Prenatal Development (cont.)

Teratology and Hazards to Prenatal Development (continued)

Psychoactive Drugs (continued)

- Cocaine

- exposure during prenatal development associated with:
 - reduced birth weight, length, and head circumference (Smith & others, 2001)
 - impaired motor development at 2 years of age (Arendt & others, 1999)
 - lower arousal, less effective self-regulation, higher excitability, and lower quality of reflexes at one month of age (Lester & others, 2002)

Prenatal Development (cont.)

Teratology and Hazards to Prenatal Development (continued)

Psychoactive Drugs (continued)

- Cocaine (continued)

- exposure during prenatal development associated with:
 - impaired language development and information processing (Beeghly & others, 2006)
 - attention deficits in preschool children (Noland & others, 2005)
 - learning disabilities at age 7 (Morrow & others, 2006)

Prenatal Development (cont.)

Teratology and Hazards to Prenatal Development (continued)

Psychoactive Drugs (continued)

- Methamphetamine or "Meth"

- stimulant that speeds up individual's nervous system
- Meth use during pregnancy is increasing.
- Babies born to mothers who use "meth" during pregnancy are at risk for:
 - high infant mortality
 - low birth weight
 - developmental and behavioral problems (Chang & others, 2004)

Prenatal Development (cont.)

Teratology and Hazards to Prenatal Development

(continued)

Psychoactive Drugs (continued)

- Marijuana

- has negative outcomes for offspring (de Moares & others, 2006; Huizink & Mulder, 2006; Williams & Ross, 2009)
- is related to deficits in memory and information processing (Kalant, 2004)
- is not recommended for pregnant women

Prenatal Development (cont.)

Teratology and Hazards to Prenatal Development

(continued)

Psychoactive Drugs (continued)

- Heroin

- infants whose mothers are addicted to heroin show withdraw symptoms, such as:
 - tremors, irritability, abnormal crying, disturbed sleep, and impaired motor control
- The most common treatment for heroin addiction, methadone, is associated with very severe withdrawal symptoms in newborns.

Prenatal Development (cont.)

Teratology and Hazards to Prenatal Development

(continued)

- Incompatible blood types
 - incompatibility between mother & father's blood types
- Sexually Transmitted Diseases
 - AIDS, syphilis, & genital herpes
- Maternal diseases & Infections
 - Diabetes, Rubella
- Environmental hazards
 - radiation, toxic wastes, & other chemical pollutants

Prenatal Development (cont.)

Teratology and Hazards to Prenatal Development

(continued)

Other Parental Factors

- Maternal diet and nutrition
 - Children born to malnourished mothers are more likely than other children to be malformed.
- Maternal age
 - Maternal ages of adolescence and thirty-five and older are of special interest (Chen & others, 2009a; Maconochie & others, 2009).
- Emotional states and stress
 - A mother's stress can be transmitted to the fetus
 - Positive emotional states also appear to make a difference to the fetus.

Prenatal Development (cont.)

Prenatal Care

- varies enormously
- involves defined schedule of visits for medical care
 - include screening for manageable conditions and treatable diseases that can affect the baby or mother (Kuppermann & others, 2006)

Prenatal care often includes comprehensive educational, social, and nutritional services (Moos, 2006).

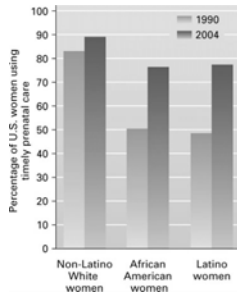
Prenatal Development (cont.)

Prenatal Care (continued)

- Information about pregnancy, labor, delivery, and caring for the newborn can be especially valuable for first-time mothers (Chang & others, 2003).
- Inadequate prenatal care may help explain a disturbing fact: Rates of infant mortality and low birth weight indicate that many other nations have healthier babies than the United States (Thornton & others, 2006).

Prenatal Development (cont.)

From 1990 to 2004, the use of timely prenatal care increased for women from a variety of ethnic backgrounds in the United States.



Prenatal Development (cont.)

Diversity in Children's Development

Cultural Beliefs about Pregnancy

- All cultures have beliefs and practices that surround life's major events, including pregnancy.
- conflict between cultural tradition and Western medicine—may pose risk for the pregnancy and a challenge for the health care professional who wishes to give proper care while respecting the woman's values

Prenatal Development (cont.)

Diversity in Children's Development (continued)

Cultural Beliefs about Pregnancy (continued)

- The American Public Health Association (2006) has identified a variety of cultural beliefs and practices that are observed among various immigrant groups:
 - food Cravings
 - "hot-cold" theory of illness
 - extended Family
 - stoicism

Prenatal Development (cont.)

Normal Prenatal Development

Most of the time, prenatal development does not go awry and development occurs along a positive path.

Birth

The Birth Process

The birth process occurs in stages, occurs in different contexts, and in most cases involves one or more attendants.

Birth (cont.)

The Birth Process (continued)

Stages of Birth

- 3 stages of birth process
- 1st stage is longest
- Uterine contractions are 15-20 minutes apart at the beginning and last up to a minute.
- **Contractions:** cause woman's cervix to stretch and open
- as 1st stage progresses, contractions come closer together, appearing every 2-5 minutes

Birth (cont.)

The Birth Process (continued)

Stages of Birth (continued)

- by end of the 1st birth stage, contractions dilate cervix to an opening of about 4 inches so that the baby can move from the uterus to the birth canal
- 2nd stage begins when baby's head moves through the cervix; ends with the baby's complete emergence
- 3rd stage is afterbirth (delivery of the placenta)

Birth (cont.)

Childbirth Setting and Attendants

- In the U. S., 99% of births take place in hospitals.
- Births at home are far more common in many other countries.
- "Birthing coaches" vary across cultures.
- In U.S. hospitals, it has become the norm for fathers or birth coaches to be with the mother throughout labor and delivery.
- In the East African Nigoni culture, men are completely excluded from the childbirth process.

Birth (cont.)

Childbirth Setting and Attendants (continued)

Midwives

- the norm throughout most of the world
- In 2003, 91% of U.S. births were attended by physicians and only 8% of women who delivered baby were attended by a *midwife* (Martin & others, 2005).
- 8% figure in 2003 represents substantial increase from less than 1% of U.S. women attended by a midwife in 1975 (Martin & others, 2005)

Birth (cont.)

Childbirth Setting and Attendants (continued)

Midwives (continued)

- 95% of the midwives who delivered babies in the U. S. in 2003 were certified nurse midwives.
- Certified nurse midwives generally:
 - spend more time with patients during prenatal visits
 - place more emphasis on patient counseling and education
 - provide more emotional support
 - are more likely to be with the patient during entire labor and delivery process

Birth (cont.)

Childbirth Setting and Attendants (continued)

Doulas

- **Doula**- Greek word that means “a woman who helps”
 - caregiver who provides continuous physical, emotional, and educational support for the mother before, during, and after childbirth
 - remains with mother throughout labor, assessing and responding to her needs
- In U. S., most doulas work as independent providers hired by the expectant mother.

Birth (cont.)

Childbirth Setting and Attendants (continued)

– Methods of Childbirth

- U.S. hospitals often allow mother and obstetrician a range of options regarding method of delivery:
 - Medication- 3 basic kinds of drugs used for labor
 - Analgesia
 - Anesthesia
 - Oxytocics

Birth (cont.)

Childbirth Setting and Attendants (continued)

Methods of Childbirth (continued)

Medication (continued)

- **Analgesia:** used to relieve pain
- **Analgesics:** include tranquilizers, barbiturates, and narcotics (such as Demerol)
- **Anesthesia:** blocks consciousness
- **Epidural block:** regional anesthesia that numbs the woman's body from the waist down
- **Oxytocin:** synthetic hormone used to stimulate contractions

Birth (cont.)

Childbirth Setting and Attendants (continued)

Methods of Childbirth (continued)

- Natural and Prepared Childbirth

- Natural childbirth

- aims to reduce mother's pain by:
 - decreasing fear through education about childbirth
 - teaching her to use breathing methods and relaxation techniques during delivery (Sandiford, 2006)
- developed in 1914 by English obstetrician Grantley Dick-Read

Birth (cont.)

Childbirth Setting and Attendants (continued)

Methods of Childbirth (continued)

- Natural and Prepared Childbirth (continued)

- prepared childbirth

- similar to natural childbirth
- developed by French obstetrician Ferdinand Lamaze
- known as Lamaze method

Birth (cont.)

Childbirth Setting and Attendants (continued)

Methods of Childbirth (continued)

-Natural and Prepared Childbirth (continued)

-prepared childbirth (continued)

- special breathing technique to control pushing in final stages of labor
- more detailed education about anatomy and physiology than Dick Read's approach
- very popular in U.S.

Birth (cont.)

Caring for Children

From Water-Birth to Music Therapy

- effort to reduce stress and control pain during labor has recently led to increase in use of some older and some newer non-medicated techniques (Field, 2009; Simkin & Bolding, 2004; Smith & others, 2006)

- water-birth
- massage
- acupuncture
- hypnosis
- music therapy

Birth (cont.)

Caring for Children (continued)

Water-birth

- involves giving birth in a tub of warm water
- Rationale- baby has been in an amniotic sac for many months and delivery in a similar environment is likely to be less stressful for the baby and the mother
- Practiced more often in European countries but is increasingly being included in U.S. birth plans.

Birth (cont.)

Caring for Children (continued)

Massage

- used as a procedure prior to and during delivery (Field, 2009)

Acupuncture

- insertion of very fine needles into specific locations in the body
- used as a standard procedure to reduce the pain of childbirth in China

Birth (cont.)

Caring for Children (continued)

Hypnosis

- induction of a psychological state of altered attention and awareness
- individual is unusually responsive to suggestions (Mottershead, 2006; Spencer, 2005)

Music Therapy

- use of music to reduce stress and manage pain

Birth (cont.)

Caring for Children (continued)

Cesarean Delivery

- **breech position:** baby's buttocks or feet are the first parts to emerge from the vagina
 - In 1 of every 25 deliveries, the baby's head is still in the uterus when the rest of the body is out.
 - Breech births can cause respiratory problems.
 - requires Cesarean delivery
- In a **cesarean delivery**, the baby is removed from the mother's uterus through an incision made in her abdomen.

Birth (cont.)

Caring for Children (continued)

Cesarean Delivery (continued)

- Cesarean deliveries are safer than breech deliveries.
- Compared with vaginal deliveries, they involve:
 - higher infection rate
 - longer hospital stays
 - the greater expense and stress that accompany any surgery

Birth (cont.)

Caring for Children (continued)

The Transition from Fetus to Newborn

- birth involves considerable stress for baby
- If the delivery takes too long, the baby can develop **anoxia**, a condition in which the fetus or newborn has an insufficient supply of oxygen.
 - can cause brain damage (Aylott, 2006)
- At the time of birth, the baby is covered with what is called **vernix caseosa**, a protective skin grease.
 - consists of fatty secretions and dead cells, thought to help protect the baby's skin against heat loss before and during birth

Birth (cont.)

Caring for Children (continued)

The Transition from Fetus to Newborn (continued)

- Immediately after birth, the umbilical cord is cut and the baby is on its own.
- Before birth, oxygen came from the mother via the umbilical cord, but now the baby is self-sufficient and can breathe on its own.
- Now 25 million little air sacs in the lungs must be filled with air.
- These first breaths may be the hardest ones an individual takes.

Birth (cont.)

Assessing the Newborn

The Apgar Score

- widely used method to assess health of newborns at 1 and 5 minutes after birth
- evaluates infant's:
 - heart rate
 - respiratory effort
 - muscle tone
 - body color
 - reflex irritability

Birth (cont.)

Assessing the Newborn (continued)

The Apgar Score (continued)

- obstetrician or nurse does the evaluation and gives the newborn a score
 - total score of 7–10 indicates good condition
 - 5-6 indicates possible problems
 - below 3 signals a life-threatening emergency

Birth (cont.)

The Apgar Scale

Score	0	1	2
Heart rate	Absent	Slow—less than 100 beats per minute	Fast—100 to 140 beats per minute
Respiratory effort	No breathing for more than one minute	Irregular and slow	Good breathing with normal crying
Muscle tone	Limp and flaccid	Weak, inactive, but some flexion of extremities	Strong, active motion
Body color	Blue and pale	Body pink, but extremities blue	Entire body pink
Reflex irritability	No response	Grimace	Coughing, sneezing, and crying



Birth (cont.)

Assessing the Newborn

The Apgar Score (continued)

- The Apgar Scale is especially good at assessing the newborn's ability to respond to the stress of delivery and the new environment (Al-Suleiman & others, 2006; Fallis & others, 2006).
- It also identifies high-risk infants who need resuscitation.

Birth (cont.)

Assessing the Newborn (continued)

The Brazelton Neonatal Behavioral Assessment Scale (NBAS)

- performed within 24 to 36 hours after birth
- assesses newborn's neurological development, reflexes, and reactions to people
- also used in research studies on infant development
- 27 items are organized in four categories:
 - physiological
 - motoric
 - state
 - interaction

Birth (cont.)

Assessing the Newborn (continued)

The Neonatal Intensive Care Unit Network Neurobehavioral Scale (NNNS)

- offshoot of the NBAS to assess at-risk infants
- provides more comprehensive analysis of the newborn's behavior, neurological and stress responses, and regulatory capacities
- also appropriate for assessing normal, healthy, full-term infants

Birth (cont.)

Low Birth Weight and Preterm Infants

Preterm and Small for Date Infants

- **Low birth weight**
 - weighs less than 5 1/4 pounds at birth
- **Very low birth weight**
 - weighs less than 3 pounds at birth
- **Extremely low birth weight**
 - weighs less than 2 pounds at birth
- **Preterm infant**
 - infant born 3 weeks or more before the pregnancy has reached its full term

Birth (cont.)

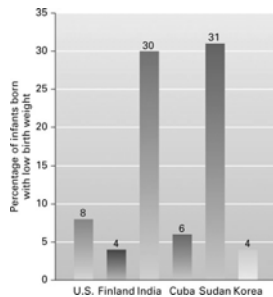
Low Birth Weight and Preterm Infants (continued)

Preterm and Small for Date Infants (continued)

- small for date infants (also called "small for gestational age" infants)
- birth weight is below normal when the length of the pregnancy is considered
- weigh less than 90% of all babies of same gestational age
- small for date infants may be preterm or full term

Birth (cont.)

The incidence of low birth weight varies considerably from country to country.



Birth (cont.)

Low Birth Weight and Preterm Infants (continued)

The Incidence of Low Birth Weight

- In the United States, there has been an increase in low birth weight infants in the last two decades.

- The U.S. low birth weight rate of 8.1% in 2004 is considerably higher than that of many other developed countries (Hoyert & others, 2006).

Birth (cont.)

Low Birth Weight and Preterm Infants (continued)

The Causes of Low Birth Weight

- causes vary, but include:
 - mother’s poor health and nutrition
 - diseases
 - cigarette smoking during pregnancy
 - young age of mother
 - use of drugs

Birth (cont.)

Low Birth Weight and Preterm Infants (continued)

The Consequences of Low Birth Weight

- Most babies turn out to be normal and healthy.
- As a group, they have more health and developmental problems than normal birth weight infants.
- Low brain weight increases the likelihood of brain injury.

Birth (cont.)

Low Birth Weight and Preterm Infants (continued)

The Consequences of Low Birth Weight (continued)

- increased risk for lung or liver diseases
- increased risk for learning disability, attention deficit hyperactivity disorder, and breathing problems
- intensive enrichment programs improve short-term outcomes
- Approximately 50% of all low birth weight children are enrolled in special education programs.

Birth (cont.)

Low Birth Weight and Preterm Infants (continued)

Nurturing Preterm Infants

- Some effects of being born low in birth weight can be reversed.
- Federal laws mandate that services for school-age children be expanded to include family-based care for infants.
- Services are aimed at children born with severe disabilities.

Birth (cont.)

Low Birth Weight and Preterm Infants (continued)

Nurturing Preterm Infants (continued)

- The two most popular Neonatal Critical Care Unit (NICU) interventions that involve parents are *breast feeding* and *kangaroo care*, a way of holding a preterm infant so that there is skin-to-skin contact.
- Both of these interventions were uncommon until recently.

Birth (cont.)

Low Birth Weight and Preterm Infants (continued)

Nurturing Preterm Infants (continued)

- In kangaroo care, the baby, wearing only a diaper, is held upright against the parent's bare chest, much as a baby kangaroo is carried by its mother.
- Kangaroo care is typically practiced for 2-3 hours per day (Feldman & others, 2003; Johnson, 2007).

Birth (cont.)

Low Birth Weight and Preterm Infants (continued)

Nurturing Preterm Infants (continued)

- Close physical contact with the parent provided by kangaroo care can help to stabilize the preterm infant's heartbeat, temperature, and breathing (Kennell, 2006; Ludington-Hoe & others, 2006).
- Preterm infants who experience kangaroo care have longer periods of sleep, gain more weight, decrease their crying, have longer periods of alertness, and earlier hospital discharge (Ludington-Hoe & others, 2006; Worku & Kassir, 2005).

Birth (cont.)

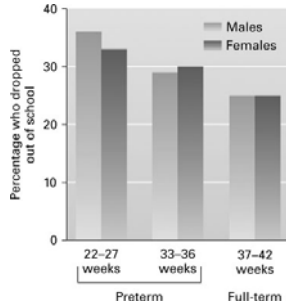
Low Birth Weight and Preterm Infants (continued)

Nurturing Preterm Infants (continued)

- Many preterm infants experience less touch than full-term infants because they are isolated in temperature-controlled incubators (Chia, Selleck, & Gans, 2006).
- Tiffany Field has researched the role that massage might play in improving the developmental outcomes for preterm infants.

Birth (cont.)

Tiffany Field's Research on Massage Therapy with Infants



Birth (cont.)

Low Birth Weight and Preterm Infants (continued)

Nurturing Preterm Infants (continued)

- In a recent review of the use of massage therapy with preterm infants, Field and her colleagues (2004) concluded that the most consistent findings involve two positive results:
 - increased weight gain
 - discharge from the hospital from 3-6 days earlier

Birth (cont.)

Low Birth Weight and Preterm Infants (continued)

Nurturing Preterm Infants (continued)

- Field and her colleagues have demonstrated the benefits of massage therapy with:
 - women in reducing labor pain
 - children who have arthritis
 - children who have asthma
 - autistic children's attentiveness
 - adolescents who have attention deficit hyperactivity disorder

The Postpartum Period

The postpartum period

- The period after childbirth that lasts for about 6 weeks or until the mother's body has completed its adjustment and has returned to a nearly pre-pregnant state.
 - a time when the woman adjusts, both physically and psychologically, to the process of childbearing
 - involves a great deal of adjustment and adaptation
 - adjustments needed are physical, emotional, and psychological

The Postpartum Period (cont.)

Physical Adjustments

- Most new mothers feel tired and need rest.
- Fatigue can undermine the new mother's sense of well-being and confidence in her ability to cope with a new baby and a new family life (Runquist, 2007).
- After delivery, a mother's body undergoes sudden and dramatic changes in hormone production.

The Postpartum Period (cont.)

Physical Adjustments (continued)

- **Involution:** the process by which uterus returns to pre-pregnant size 5-6 weeks after birth
- Nursing the baby helps contract the uterus at a rapid rate.
- If the woman regularly engaged in conditioning exercises during pregnancy, exercise will help her recover her former body contour and strength.

The Postpartum Period (cont.)

Physical Adjustments (continued)

- Relaxation techniques are also helpful during the postpartum period.
- 5 minutes of slow breathing on a stressful day can relax and refresh the new mother and the new baby.

The Postpartum Period (cont.)

Emotional and Psychological Adjustments

- Emotional fluctuations are common for mothers in the postpartum period.
- For some women, emotional fluctuations decrease within several weeks after the delivery, but other women experience more long-lasting emotional swings.

The Postpartum Period (cont.)

Percentage of U.S. Women Who Experience Postpartum Blues and Postpartum Depression



The Postpartum Period (cont.)

Emotional and Psychological Adjustments (continued)

- signs that professional counseling is needed include:
 - excessive worrying
 - depression
 - extreme changes in appetite
 - crying spells
 - inability to sleep

The Postpartum Period (cont.)

Emotional and Psychological Adjustments (continued)

Postpartum Depression

- major depressive episode that typically occurs about 4 weeks after delivery
- Women with postpartum depression have such strong feelings of sadness, anxiety, or despair that for at least a 2 week period, they have trouble coping with their daily tasks.
- About 10% of new mothers experience postpartum depression.

The Postpartum Period (cont.)

Emotional and Psychological Adjustments (continued)

Postpartum Depression (continued)

- Hormonal changes that occur after childbirth are believed to play a role in postpartum depression (Groer & Morgan, 2007; Jolley & others, 2007).
- Psychotherapy, especially cognitive therapy, is an effective treatment of postpartum depression for many women (Beck, 2006; Lasiuk & Ferguson, 2005).

The Postpartum Period (cont.)

Emotional and Psychological Adjustments (continued)

Postpartum Depression (continued)

- Fathers also undergo considerable adjustment in the postpartum period.
- Many fathers feel that the baby comes first and gets all of the mother's attention.
- Some fathers feel that they have been replaced by the baby.

The Postpartum Period (cont.)

Emotional and Psychological Adjustments (continued)

Postpartum Depression (continued)

- To help the father adjust, parents should set aside some special time to be together with each other.
- The father's postpartum reaction will be improved if he has taken childbirth classes with the mother and is an active participant in caring for the baby.

The Postpartum Period (cont.)

Emotional and Psychological Adjustments (continued)

Bonding

- a special component of the parent-infant relationship
- the formation of a connection, especially a physical bond, between parents and the newborn in the period shortly after birth

The Postpartum Period (cont.)

Emotional and Psychological Adjustments (continued)

Bonding (continued)

- The **extreme** form of the bonding hypothesis—that the newborn must have close contact with the mother in the first few days of life to develop optimally—simply is not true.
- Early close contact may establish a climate for improved interaction after the mother and infant leave the hospital.

The Postpartum Period (cont.)

Emotional and Psychological Adjustments (continued)

Bonding (continued)

- Many hospitals now offer a *rooming-in* arrangement, in which the baby remains in the mother's room most of the time during its hospital stay.

E-LEARNING TOOLS

To help you master the material in this chapter, visit the Online Learning Center for Child Development, twelfth edition at:

<http://www.mhhe.com/santrockcd12>
