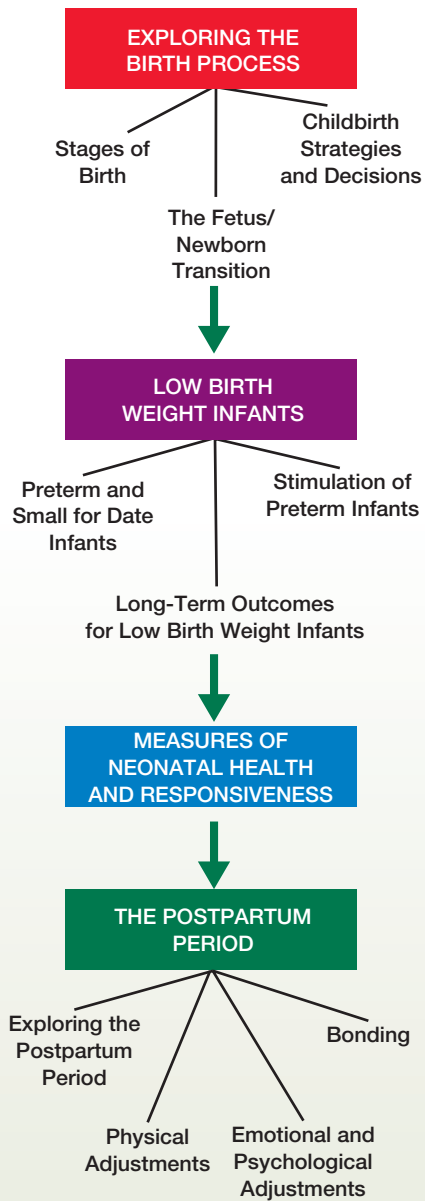


Chapter

5

Chapter Map



Birth

The Story of Tanner Roberts' Birth: A Fantastic Voyage

Tanner Roberts was born in a suite at St. Joseph's Medical Center in Burbank, California (Warrick, 1992). Let's examine what took place in the hours leading up to his birth. It is day 266 of his mother, Cindy's, pregnancy. She is in the frozen-food aisle of a convenience store and feels a sharp pain, starting in the small of her back and reaching around her middle, which causes her to gasp. For weeks, painless Braxton Hicks spasms (named for the gynecologist who discovered them) have been flexing her uterine muscles. But these practice contractions were not nearly as intense and painful as the one she just experienced. After six hours of irregular spasms, her uterus settles into a more predictable rhythm.

At 3 A.M., Cindy and her husband, Tom, are wide awake. They time Cindy's contractions with a stopwatch. The contractions are now only six minutes apart. It's time to call the hospital. At the hospital, Cindy goes to a labor-delivery suite. The nurse puts a webbed belt and fetal monitor around Cindy's middle to measure the labor. The monitor picks up the fetal heart rate. With each contraction of the uterine wall, Tanner's heartbeat jumps from its resting state of about 140 beats to 160 to 170 beats per minute. When the cervix is dilated to more than 4 centimeters, or almost half open, Cindy is given her first medication. As Demerol begins to drip in her veins, she becomes more relaxed. Tanner's heart rate dips to 130 and then 120.

Contractions are now coming every 3 to 4 minutes, each one lasting about 25 seconds. The Demerol does not completely obliterate Cindy's pain. She hugs her husband as the nurse urges her to "relax those muscles. Breathe deep. Relax. You are almost done."

Each contraction briefly cuts off Tanner's source of oxygen. However, the minutes of rest between each contraction resupply the oxygen and Cindy's deep breathing helps rush fresh blood to the fetal heart and brain.

At 8 A.M., Cindy's obstetrician arrives and determines that her cervix is almost completely dilated. Using a tool made for the purpose, he reaches into the birth canal and tears the membranes of the amnio sac, and about half a liter of clear fluid flows out. Contractions are now coming every two minutes, and each one is lasting a full minute.

By 9 A.M., the labor suite has been transformed into a delivery room. Tanner's body is compressed by his mother's contractions and pushes. As he nears his entrance into the world, the compressions help press the fluid from his lungs in preparation for his first breath.

Squeezed tightly in the birth canal, the top of Tanner's head emerges. His face is puffy and scrunched. Although fiercely squinting because of the sudden light, Tanner's eyes are open. Tiny bubbles of clear mucus are on his lips. Before any more of his body emerges, the obstetrician cradles Tanner's head and suctions his nose and mouth. Tanner takes his first breath, a large gasp followed by whimpering, and then a loud cry.

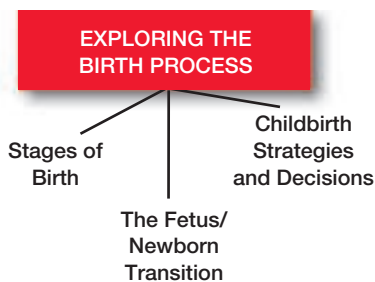
Tanner's trunk and head are luminescent pink. His limbs are still gray-blue from lack of oxygen. His fingers and toes are gray. His body is wet but only slightly bloody as the doctor lifts him onto his mother's abdomen.

The umbilical cord, still connecting Tanner with his mother, slows and stops pulsating. The obstetrician cuts it, severing Tanner's connection to his mother's womb. Now Tanner's blood flows not to his mother's blood for nourishment, but to his own lungs, intestines, and other organs.

LEARNING GOALS FOR THIS CHAPTER

THE BIRTH OF A BABY creates changes in the family. It is an event with long-lasting consequences. Although there are many ways to have a baby, the goal always should be to ensure the health of the mother and the baby. By the time you have completed this chapter, you should be able to reach these learning goals:

- Learning Goal 1** Describe the Stages of Birth
- Learning Goal 2** Discuss the Fetus/Newborn Transition
- Learning Goal 3** Distinguish Different Childbirth Strategies
- Learning Goal 4** Describe Low Birth Weight Infants
- Learning Goal 5** Know What Measures Are Used to Assess Neonatal Health and Responsiveness
- Learning Goal 6** Discuss the Postpartum Period



Exploring the Birth Process

As we saw in the opening story about Tanner Roberts, many changes take place during the birth of a baby. Let's further explore the birth process by examining the stages of birth, what the birth experience is like for the fetus and newborn, and a variety of childbirth strategies.

Stages of Birth

The birth process occurs in three stages. For a woman having her first child, the first stage lasts an average of 12 to 24 hours; it is the longest of the three stages. In the first stage, uterine contractions are 15 to 20 minutes apart at the beginning and last up to a minute. These contractions cause the woman's cervix to stretch and open. As the first stage progresses, the contractions come closer together, appearing every 2 to 5 minutes. Their intensity increases too. By the end of the first birth stage, contractions dilate the cervix to an opening of about 4 inches, so that the baby can move from the uterus to the birth canal.

The second birth stage begins when the baby's head starts to move through the cervix and the birth canal. It terminates when the baby completely emerges from the mother's body. This stage lasts approximately 1½ hours. With each contraction, the mother bears down hard to push the baby out of her body. By the time the baby's head is out of the mother's body, the contractions come almost every minute and last for about a minute.

Afterbirth is the third stage, at which time the placenta, umbilical cord, and other membranes are detached and expelled. This final stage is the shortest of the three birth stages, lasting only minutes (see figure 5.1).

afterbirth

The third stage of birth, when the placenta, umbilical cord, and other membranes are detached and expelled.

anoxia

The insufficient availability of oxygen to the fetus/newborn.

The Fetus/Newborn Transition

Being born involves considerable stress for the baby. During each contraction, when the placenta and umbilical cord are compressed as the uterine muscles draw together, the supply of oxygen to the fetus is decreased. **Anoxia** is the term used to describe the condition in which the fetus/newborn has an insufficient supply of oxygen. Anoxia can cause brain damage (Mohan, Golding, & Paterson, 2001). If the delivery takes too long, anoxia can develop.

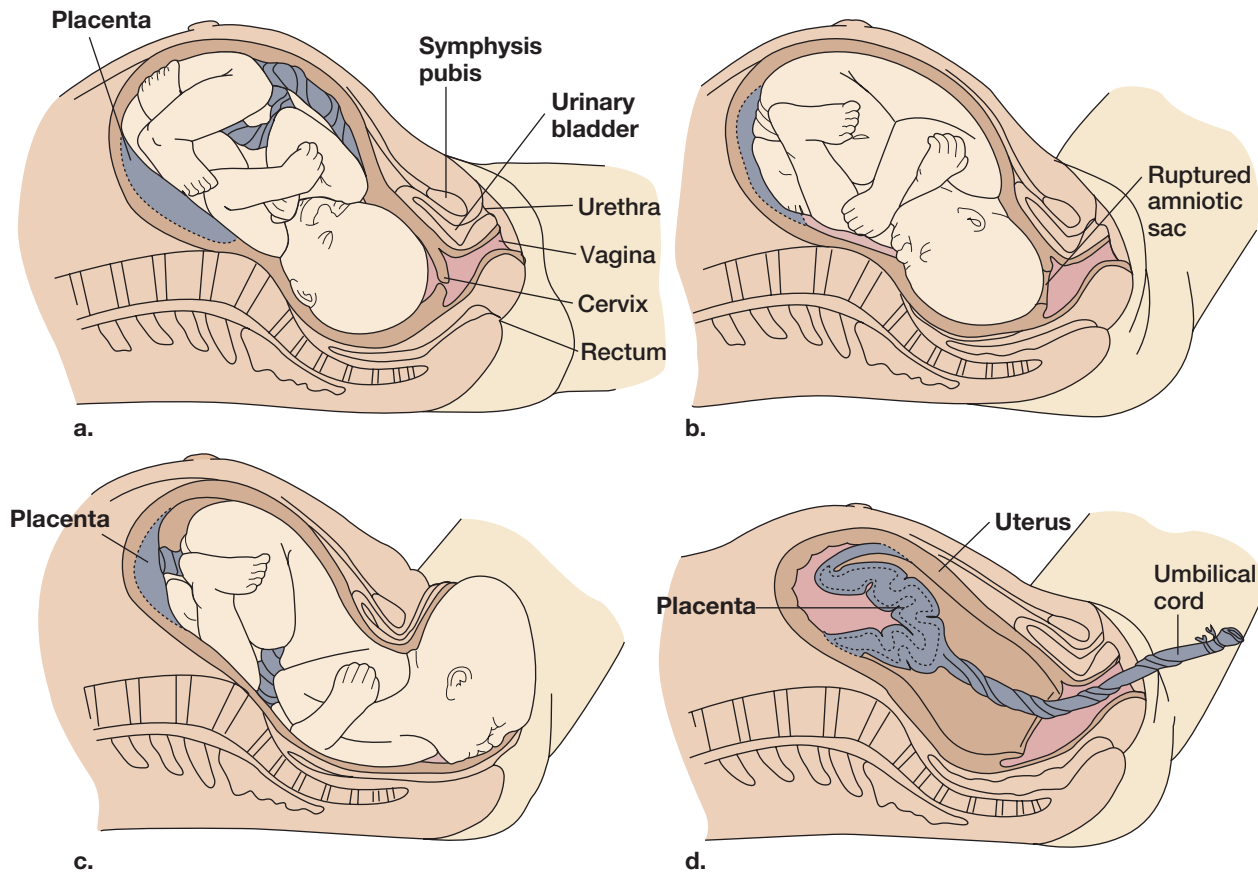


Figure 5.1
The Stages of Birth

(a) First stage: cervix is dilating; (b) late first stage (transition stage): cervix is fully dilated, and the amniotic sac has ruptured, releasing amniotic fluid; (c) second stage: birth of the infant; (d) third stage: delivery of the placenta (afterbirth).

The baby has considerable capacity to withstand the stress of birth. Large quantities of adrenaline and noradrenaline, hormones that are important in protecting the fetus in the event of oxygen deficiency, are secreted in stressful circumstances (Jankov, Asztalos, & Skidmore, 2000). These hormones increase the heart's pumping activity, speed up heart rate, channel blood flow to the brain, and raise blood-sugar level. Never again in life will such large amounts of these hormones be secreted. This circumstance underscores how stressful it is to be born but also how prepared and adapted the fetus is for birth (Mishell, 2000; Von Beveren, 2002).

As we saw in the case of Tanner Roberts at the beginning of the chapter, the umbilical cord is cut immediately after birth, and the baby is on its own. Now 25 million little air sacs in the lungs must be filled with air. Until now, these air sacs have held fluid, but this fluid is rapidly expelled in blood and lymph. The first breaths may be the hardest ones at any point in the life span. Until now, oxygen came from the mother via the umbilical cord, but now the baby has to be self-sufficient and breathe on its own. The newborn's bloodstream is redirected through the lungs and to all parts of the body.

At the time of birth, the baby is covered with what is called *vernix caseosa*, a protective skin grease. This vernix consists of fatty secretions and dead cells, thought to function in protecting the baby's skin against heat loss before and during birth. After the baby and mother have met and become acquainted with each other, the baby is taken to be cleaned, examined, weighed, and evaluated. Later in the chapter, we will discuss several measures that are used to examine the newborn's health and responsiveness.



**Birth Mailing Lists
and Newsgroups
Newborn Care
Preparing for Birth**

We must respect this instant of birth, this fragile moment. The baby is between two worlds, on a threshold, hesitating . . .
—Frederick Leboyer
French Obstetrician, 20th Century

CAREERS IN CHILD DEVELOPMENT

Rachel Thompson, *Obstetrician/Gynecologist*

RACHEL THOMPSON is the senior member of Houston Women's Care Associates, which specializes in health care for women. She has one of Houston's most popular obstetrics/gynecology (OB/GYN) practices. Rachel's medical degree is from Baylor College of Medicine, where she also completed her internship and residency.

In addition to her clinical practice, Rachel also is a clinical instructor in the Department of Obstetrics and Gynecology at Baylor College of Medicine. Rachel says that one of the unique features of their health-care group is that the staff is comprised of only women who are full-time practitioners.



Rachel Thompson (right), who has pursued a career in obstetrics/gynecology.

At this point we have examined a number of ideas about stages of birth and the fetus/newborn transition. This review should help you to reach your learning goals related to these topics.

FOR YOUR REVIEW

Learning Goal 1 Describe the Stages of Birth

- Three stages of birth have been defined. The first lasts about 12 to 14 hours for a woman having her first child. The cervix dilates to about 4 centimeters. The second stage begins when the baby's head moves through the cervix and ends with the baby's complete emergence. The third stage is **afterbirth**.

Learning Goal 2 Discuss the Fetus/Newborn Transition

- In some cases, anoxia occurs. **Anoxia** involves an insufficient supply of oxygen in the fetus/newborn condition.
- Being born involves considerable stress but the baby is well prepared and adapted to handle the stress. Huge quantities of stress-related hormones (adrenaline and noradrenaline) are secreted during the fetus/newborn transition.

Now that we have studied the stages of birth and fetus/newborn transition, let's turn our attention to some childbirth strategies and decisions.

Childbirth Strategies and Decisions

Among the childbirth decisions that need to be made are what the setting will be and who the attendants will be, which childbirth technique will be used, and what the father's or sibling's role will be.



What are some characteristics of the childbirth setting in the United States?

Childbirth Setting and Attendants In the United States, 99 percent of births take place in hospitals, and more than 90 percent are attended by physicians (Ventura & others, 1997). Many hospitals now have birthing centers, where fathers or birth coaches may be with the mother during labor and delivery. Some people believe this so-called alternative birthing center offers a good compromise between a technological, depersonalized hospital birth (which cannot offer the emotional experience of a home birth) and a birth at home (which cannot offer the medical backup of a hospital). A birthing room approximates a home setting as much as possible. The birthing room allows for a full range of birth experiences, from a totally unmedicated, natural birth to the most complex, medically intensive care. Some women with good medical histories and low risk for problem delivery choose a home delivery or a delivery in a freestanding birthing center, which is usually staffed by nurse-midwives (Wong, Perry, & Hockenberry, 2001).

Approximately 6 percent of women who deliver a baby in the United States are attended by a midwife (Ventura & others, 1997). Most midwives are nurses who have been specially trained in delivering babies (Webster & others, 1999).

In many countries around the world, babies are more likely to be delivered at home than they are in the United States. For example, in Holland, 35 percent of the babies are born at home, and more than 40 percent are delivered by midwives rather than doctors (Treffers & others, 1990).

In many countries, a doula attends a childbearing woman. *Doula* is a Greek word that means “a woman who helps.” A **doula** is a caregiver who provides continuous physical, emotional, and educational support for the mother before, during, and after childbirth. Doulas remain with the mother throughout labor, assessing and responding to her needs (Keenan, 2000). In one study, the mothers who received doula support reported less labor pain than the mothers who did not receive doula support (Klaus, Kennell, & Klaus, 1993). Doulas typically function as part of a “birthing team,” serving as an adjunct to the midwife or the hospital obstetric staff (McGrath & others, 1999).

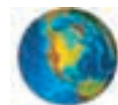
In the United States, most doulas work as independent providers hired by the expectant woman. Managed care organizations are increasingly offering doula support as a part of regular obstetric care. In many cultures, the practice of a knowledgeable woman helping a mother in labor is not officially labeled “doula” support but is simply an ingrained, centuries-old custom.



**Childbirth Setting
and Attendants**
Midwifery
Doula
Labor Induction

doula

A caregiver who provides continuous physical, emotional, and educational support to the mother before, during, and just after childbirth.



Childbirth Strategies



A woman in the African !Kung culture giving birth in a sitting position. Notice the help and support being given by another woman. *What are some cultural variations in childbirth? How does childbirth in the United States differ from childbirth in many nonindustrialized countries?*

analgesia

Drugs used to alleviate pain, such as tranquilizers, barbiturates, and narcotics.

anesthesia

Drugs used in late first-stage labor and during expulsion of the baby to block sensation in an area of the body or to block consciousness.

oxytocics

Drugs that are synthetic hormones designed to stimulate contractions.

natural childbirth

Developed in 1914 by Dick-Read, it attempts to reduce the mother's pain by decreasing her fear through education about childbirth and relaxation techniques during delivery.

prepared childbirth

Developed by French obstetrician Ferdinand Lamaze, this childbirth strategy is similar to natural childbirth but includes a special breathing technique to control pushing in the final stages of labor and a more detailed anatomy and physiology course.

In many cultures, several people attend the mother during labor and delivery. Which persons attend the mother may vary across cultures. In the East African Nigoni culture, men are completely excluded from the childbirth process. In this culture, women even conceal their pregnancy from their husband as long as possible. In the Nigoni culture, when a woman is ready to give birth, female relatives move into the woman's hut and the husband leaves, taking his belongings (clothes, tools, weapons, and so on) with him. He is not permitted to return to the hut until after the baby is born.

A common characteristic in nonindustrialized cultures is for one of the female helpers to hold the woman from behind while she gives birth. In the Mayan culture in Mexico, a head helper breathes with her during each contraction (Jordan, 1993).

In some cultures, childbirth is much more of an open, community affair than in the United States. For example, in the Pukapukan culture in the Pacific Islands, women give birth in a shelter that is open for villagers to observe.

Methods of Delivery Among the methods of delivery are medicated, natural and prepared, and cesarean.

Medicated The American Academy of Pediatrics recommends the least possible medication during delivery (Hotchner, 1997). There are three basic kinds of drugs that are used for labor: analgesia, anesthesia, and oxytocics. **Analgesia** is used to relieve pain. Analgesics include tranquilizers, barbiturates, and narcotics (such as Demerol). **Anesthesia** is used in late first-stage labor and during expulsion of the baby to block sensation in an area of the body or to block consciousness. There is a trend toward not using general anesthesia in normal births because it can be transmitted through the placenta to the fetus. However, an epidural anesthesia does not cross the placenta. An *epidural block* is regional anesthesia that numbs the woman's body from the waist down. Even this drug, thought to be relatively safe, has come under recent criticism because it is associated with fever, extended labor, and increased risk for cesarean delivery (Lieberman & others, 1997; Ransjo-Arvidson & others, 2001). **Oxytocics** are synthetic hormones that are used to stimulate contractions (Capogna & others, 2001). Pitocin is the most commonly used oxytocic (Carbonne, Tsatsarius, & Goffinet, 2001).

Predicting how a particular drug will affect an individual pregnant woman and the fetus is difficult. While we have many commonalities as human beings, we also vary a great deal. Thus, a particular drug may have only a minimal effect on one fetus yet have a much stronger effect on another fetus. The drug's dosage also is a factor, with stronger doses of tranquilizers and narcotics given to decrease the mother's pain having a potentially more negative effect on the fetus than mild doses.

It is important for the mother to assess her level of pain and be an important voice in the decision of whether she should receive medication or not.

While the trend at one time was toward a natural childbirth without any medication, today the emphasis is on using some medication but keeping it to a minimum when possible. The emphasis today also is on broadly educating the pregnant woman so that she can be reassured and confident. Next, we will consider natural and prepared childbirth, which reflect this emphasis on education.

Natural and Prepared Childbirth **Natural childbirth** was developed in 1914 by an English obstetrician, Grantley Dick-Read. It attempts to reduce the mother's pain by decreasing her fear through education about childbirth and by teaching her to use breathing methods and relaxation techniques during delivery. Dick-Read also believed that the doctor's relationship with the mother is an important dimension of reducing her perception of pain. He said the doctor should be present during her active labor prior to delivery and should provide reassurance.

Prepared childbirth was developed by French obstetrician Ferdinand Lamaze. This childbirth strategy is similar to natural childbirth but includes a special breathing technique to control pushing in the final stages of labor and a more detailed anatomy and physiology course. The Lamaze method has become very popular in the United States. The

pregnant woman's husband or a friend usually serves as a coach, who attends childbirth classes with her and helps her with her breathing and relaxation during delivery.

Many other prepared childbirth techniques also have been developed (Samuels & Samuels, 1996). They usually include elements of Dick-Read's natural childbirth or Lamaze's method, plus one or more new components (Harper, 2000; McCracken, 2000). For instance, the Bradley method places special emphasis on the father's role as a labor coach. Virtually all of the prepared childbirth methods emphasize some degree of education, relaxation and breathing exercises, and support. In recent years, new ways of teaching relaxation have been offered, including guided mental imagery, massage, and meditation. In sum, the current belief in prepared childbirth is that, when information and support are provided, women *know* how to give birth.

Cesarean Delivery In a **cesarean delivery**, *the baby is removed from the mother's uterus through an incision made in her abdomen. This also is sometimes called a cesarean section.* A cesarean section is usually performed if the baby is in a **breech position**, *which causes the baby's buttocks to be the first part to emerge from the vagina.* Normally, the crown of the baby's head comes through the vagina first, but in 1 of every 25 babies, the head does not come through first. Breech babies' heads are still in the uterus while the rest of their bodies are out, which can cause respiratory problems.

Cesarean deliveries also are performed if the baby is lying crosswise in the uterus, if the baby's head is too large to pass through the mother's pelvis, if the baby develops complications, or if the mother is bleeding vaginally.

The benefits and risks of cesarean sections continue to be debated (Alexander, McIntire, & Leveno, 2001; Green & others, 2001). Cesarean deliveries are safer than breech deliveries, but they involve a higher infection rate, longer hospital stay, and greater expense and stress that accompany any surgery.

Some critics believe that in the United States too many babies are delivered by cesarean section. More cesarean sections are performed in the United States than in any other country in the world. In the 1980s, births by cesarean section increased almost 50 percent in the United States, with almost one-fourth of babies delivered in this way. In the 1990s, the growing use of vaginal birth after a previous cesarean, greater public awareness, and peer pressure in the medical community led to some decline in cesarean sections.

Fathers and Childbirth In the past several decades, fathers increasingly have participated in childbirth. Fathers-to-be are now more likely to go to at least one meeting with the obstetrician or caregiver during the pregnancy, attend childbirth preparation classes, learn about labor and birth, and be more involved in the care of the young infant. The change is consistent with our culture's movement toward less rigid concepts of "masculine" and "feminine."

For many expectant couples today, the father is trained to be the expectant mother's coach during labor, helping her learn relaxation methods and special breathing techniques for labor and birth (Greenhalgh, Slade, & Spiby, 2000). Most health professionals now believe that, just as with pregnancy, childbirth should be an intimate,

CAREERS IN CHILD DEVELOPMENT

Linda Pugh, *Perinatal Nurse*

PERINATAL NURSES work with childbearing women to support health and growth during the childbearing experience. Linda Pugh (Ph.D., R.N.C.) is a perinatal nurse on the faculty at the Johns Hopkins University School of Nursing. She is certified as an inpatient obstetric nurse and specializes in the care of women during labor and delivery. Linda teaches nursing to both undergraduate and graduate students. In addition to educational professional nurses and conducting research, Linda consults with hospitals and organizations about women's health issues.

Linda's research interests include nursing interventions with low-income breast-feeding women, discovering ways to prevent and ameliorate fatigue during childbearing, and using effective breathing exercises during labor.



Linda Pugh (*right*) with a mother and her newborn.

cesarean delivery

The baby is removed from the mother's uterus through an incision made in her abdomen. This also is sometimes referred to as cesarean section.

breech position

The baby's position in the uterus that causes the buttocks to be the first part to emerge from the vagina.



Labor and Birth Resources
Lamaze
Cesarean Childbirth



Many husbands, or coaches, take childbirth classes with their wives or friends as part of prepared or natural childbirth. This is a Lamaze training session. *What is the nature of the Lamaze method? Who devised it?*



Fathers and Childbirth Siblings and Childbirth

shared moment between two people who are creating a new life together. Nonetheless, some men do not want to participate in prepared childbirth, and some women also still prefer that they not have a very active role. In such cases, other people can provide support for childbirth—mother, sister, friend, midwife, or physician, for example.

Husbands who are motivated to participate in childbirth have an important role at their wife's side. In the long stretches when there is no staff attendant present, a husband can provide companionship, support, and encouragement. In difficult moments of examination or medication, he can be comforting. Initially, he may feel embarrassed to use the breathing techniques he has learned in preparation classes, but he usually begins to feel more at home when he realizes he is performing a necessary function for his wife during each contraction.

Some individuals question whether the father is the best coach during labor. He may be nervous and feel uncomfortable in the hospital. Never having gone through labor himself, he might not understand the expectant mother's needs as well as another woman. There is no universal answer to this issue. Some laboring women want to depend on another woman, someone who has been through labor herself. Others want their husband to intimately share the childbirth experience. Many cultures exclude men from births, just as the American culture did until the past several decades. In some cultures, the woman's mother, or occasionally a daughter, serves as her assistant.

Siblings and Childbirth If parents have a child and are expecting another, it is important for them to prepare the older child for the birth of a sibling. Sibling preparation includes providing the child with information about pregnancy, birth, and life with a newborn that is realistic and appropriate for the child's age.

Parents can prepare their older child for the approaching birth at any time during pregnancy. The expectant mother might announce the pregnancy early to explain her tiredness and vomiting. If the child is young and unable to understand waiting, parents may want to delay announcing the pregnancy until later, when the expectant mother's pregnancy becomes obvious and she begins to look "fat" to the child.

Parents may want to consider having the child present at the birth. Many family-centered hospitals, birth centers, and home births make this option available. Some parents wish to minimize or avoid separation from the older child, so they choose to give birth where sibling involvement is possible. These parents feel that, if there is no separation, the child will not develop separation anxiety and will not see the new baby as someone who took the mother away. Sibling involvement in the birth may enhance the attachment between the older child and the new baby. On the other hand, some children may not want to participate in the birthing process and should not be forced into it. Some preschool children may be overwhelmed by the whole process, and older children may feel embarrassed.

If the birth will be in a hospital with a typical stay of three to five days, parents need to consider the possibility that the child will feel separation anxiety by being separated from one or both parents. To ease the child's separation anxiety, the expectant mother should let the child know approximately when she will be going to the hospital, should tour the hospital with the child if possible, and, when labor begins, should tell the child where she is going. Before birth, the expectant mother can increase the father's role as

a caregiver, if he is not already responsible for much of the child's daily care. Parents can ask about the regulations at the hospital or birth setting and, if possible, have the child visit the mother there. As sibling visitation has become recognized as a positive emotional experience for the entire family, hospitals are increasingly allowing children to visit their mothers after the birth of the baby. Some hospitals even allow siblings in the recovery room to see both the mother and the newborn.

In addition to being separated from the mother, the child now has to cope with another emotionally taxing experience: the permanent presence of a crying newborn who requires extensive care and attention from the mother. Life is never the same for the older child after the newborn arrives. Parents who once might have given extensive attention to the child now suddenly have less time available for the child—all because of the new sibling. It is not unusual for a child to ask a parent, "When are you going to take it back to the hospital?" Many children engage in regressive and attention-seeking behaviors after a new sibling arrives, such as sucking their thumb, directing anger at their parents or the baby (hitting, biting, or throwing things), wanting a bottle or the mother's breasts for themselves, or bed-wetting. Such behaviors are natural and represent the child's way of coping with stress. Parents should not act as if they are disappointed because the child is behaving in such ways and should worry about such behaviors only if they persist after the child has had a reasonable amount of time to adjust to the new baby. To help the child cope with the arrival of a new baby, parents can (Simkin, Whalley, & Keppler, 1984)



THROUGH THE EYES OF CHILDREN

"That Baby Makes Silly Noises"

FOUR-YEAR-OLD ROBBIE didn't know what his life was going to be like after his little brother was born. After they brought his new sibling, Terry, home from the hospital, Robbie watched as first his mother then his father cradled Terry and fussed over him. Robbie started to become more aloof. One day Robbie made a beeline for Terry and started to sock him. Fortunately, his mother was able to grab him before he hurt the baby. Several days later, he told his mom, "That baby makes silly noises."

His mother talked with Robbie about how important it is to be gentle with the baby and made a special effort to give Robbie more attention than she had been doing. Gradually, the parents let Robbie loose in Terry's presence, and no more baby assaults occurred.

It's hard for older siblings not to feel some jealousy when a new sibling arrives on the scene. By considering the older sibling's feelings and making sure the older sibling gets adequate attention, the sibling rivalry usually doesn't escalate into a problem.



How can parents prepare a child for the birth of a sibling?

- before and after the birth, read books to the child about living with a new baby.
- plan for time alone with the older child and do what he or she wants to do.
- use the time when the baby is asleep and the parent is rested to give special attention to the older child.
- give a gift to the older child in the hospital or at home.
- “tell” the baby about his or her special older brother or sister when the older sibling is listening.

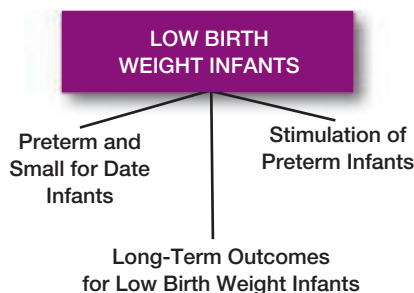
At this point we have examined a number of ideas about childbirth strategies and decisions. This review should help you to reach your learning goal related to this topic.

FOR YOUR REVIEW

Learning Goal 3 Distinguish Different Childbirth Strategies

- In the United States, the vast majority of births occur in hospitals and are attended by physicians. Many hospitals now have birthing centers. Some women with good medical histories and are low risk for problem deliveries have babies at home. In many countries, such as Holland, much higher percentages of babies are born at home. Some births are attended by a midwife, and in many countries a **doula** attends.
- Among the methods of delivery are medicated, **natural** and **prepared**, and **cesarean**. The three basic kinds of drugs used in delivering a baby are **analgesics**, **anesthesia**, and **oxytocics**. Predicting how a particular drug will affect an individual pregnant woman and the fetus is difficult. Today the trend is toward using some medication during childbirth but keeping it to a minimum, if possible. The Lamaze method of childbirth is widely used in the United States.
- In the past several decades, fathers increasingly have participated in childbirth. In some cultures, the father is excluded from childbirth, as was the case in the United States until recently.
- Sibling preparation includes providing the child with information about the pregnancy, birth, and life with a newborn that is realistic and appropriate for the child’s age.

So far in this chapter we have studied stages of birth, the fetus/newborn transition, and childbirth strategies and decisions. Next, we will explore numerous aspects of preterm infants and age/weight considerations.



low birth weight infant

Weighs less than 5½ pounds at birth.

Low Birth Weight Infants

A **low birth weight infant** weighs less than 5½ pounds at birth. Two subgroups are those that are *very low birth weight* (under 3 pounds) and *extremely low birth weight* (under 2 pounds) (Horbar & others, 2001).

How does the United States fare in relation to other countries in the percent of low birth weight infants born each year? One in 13 babies born in the United States today is low birth weight (Children’s Defense Fund, 2000). A number of European countries (Norway, Spain, France, Italy, and Sweden, for example) have a lower percentage of low birth weight babies than the United States (UNICEF, 1998). Canada also has a slightly lower percentage. Both poverty and social policy are involved in the percentage of low birth weight babies born in a nation. In impoverished countries such as Bangladesh with inadequate medical and health policies, as many as one of every two babies is low birth weight.

However, income alone does not predict the percentage of low birth weight infants. In 1998, the United States had the highest gross product of any nation (more than 7 trillion dollars) yet 33 of 148 nations had a lower percentage of low birth weight infants than the United States.

Equal opportunity for life is an American ideal that is not fulfilled at birth (Paneth, 1995). African American babies are twice as likely as White babies to be born low birth

weight, to be born preterm, or to die at birth. Seventeen percent of all births are to African American families, yet 33 percent of all low birth weight infants and 38 percent of all very low birth weight infants are born to African American families.

Low birth weight babies may be preterm or simply small for their date of birth.

Preterm and Small for Date Infants

Preterm infants are those born three weeks or more before the pregnancy has reached its full term. This means that the term “preterm” is given to an infant who is born at 35 or less weeks after conception. Most preterm babies are also low birth weight babies.

A short gestation period does not necessarily harm an infant. It is distinguished from retarded prenatal growth, in which the fetus has been damaged (Kopp, 1992). The neurological development of a preterm baby continues after birth on approximately the same timetable as if the infant still were in the womb. For example, consider a preterm baby born 30 weeks after conception. At 38 weeks, approximately two months after birth, this infant shows the same level of brain development as a 38-week fetus who is yet to be born.

Small for date infants (also called **small for gestational age infants**) are those whose birth weight is below normal when the length of pregnancy is considered. Small for date infants may be preterm or full term. They weigh less than 90 percent of all babies of the same gestational age. Inadequate nutrition and smoking by the pregnant woman are among the main factors in producing small for date infants (Chan, Keane, & Robinson, 2001; Embleton, Pang, & Cooke, 2001; England & others, 2001).

Long-Term Outcomes for Low Birth Weight Infants

Although most low birth weight infants are normal and healthy, as a group they have more health and developmental problems than normal birth weight infants (Chescheir & Hansen, 1999; Hack, Klein, & Taylor, 1995). The number and severity of these problems increase as birth weight decreases (Lemons & others, 2001; Tommiska & others, 2001). With the improved survival rates for infants who are born very early and very small come increases in severe brain damage. Cerebral palsy and other forms of brain injury are highly correlated with brain weight—the lower the brain weight, the greater the likelihood of brain injury. Approximately 7 percent of moderately low birth weight infants (3 pounds 5 ounces to 5 pounds 8 ounces) have brain injuries. This figure increases to 20 percent for the smallest newborns (1 pound 2 ounces to 3 pounds 5 ounces). Low birth weight infants are also more likely than normal birth weight infants to have lung or liver diseases.

At school age, children who were born low in birth weight are more likely than their normal birth weight counterparts to have a learning disability, attention deficit disorder, or breathing problems, such as asthma (Taylor, Klein, & Hack, 1994). Children born very low in birth weight have more learning problems and lower levels of achievement in reading and math than moderately low birth weight children. These problems are reflected in much higher percentages of low birth weight children being enrolled in special education programs. Approximately 50 percent of all low birth weight children are enrolled in special education programs.

Do these negative outcomes of low birth weight continue into adolescence? In one recent study, the outcomes at middle-school age of being very low birth weight (under 750 grams) were examined (Taylor & others, 2000). When compared with a control group who was born at full term, the low birth weight adolescents had weaker academic records and showed more behavioral problems.

Not all of these adverse consequences can be attributed solely to being born low in birth weight. Some of the less severe but more common developmental and physical delays occur because many low birth weight children come from disadvantaged environments.



A “kilogram kid,” weighing less than 2.3 pounds at birth. *What are some possible outcomes for low birth weight infants?*

preterm infants

Those born three weeks or more before the pregnancy has reached its full term.

small for date (small for gestational age) infants

Those whose birth weight is below normal when the length of pregnancy is considered.



Exploring Low Birth Weight Issues

Although the survival of children with very low birthweights has increased dramatically in the last two decades, developmental outcomes for these children remains a serious concern.

—Maureen Hack
Contemporary Psychologist,
Case Western Reserve University



Touch Research Institute

Some of the devastating effects of being born low in birth weight can be reversed (Blair & Ramey, 1996; Osendarp & others, 2001; Shino & Behrman, 1995). Intensive enrichment programs that provide medical and educational services for both the parents and the child have been shown to improve short-term developmental outcomes for low birth weight children (Kleberg, Westrup, & Stjernquist, 2000). Federal laws mandate that services for school-age disabled children (which include medical, educational, psychological, occupational, and physical care) be expanded to include family-based care for infants. At present, these services are aimed at children born with severe congenital disabilities. The availability of services for moderately low birth weight children who do not have severe physical problems varies from state to state, but generally these services are not available.

Stimulation of Preterm Infants

Just three decades ago, preterm infants were perceived to be too fragile to cope well with environmental stimulation, and the recommendation was to handle such infants as little as possible. The climate of opinion changed when the adverse effects of maternal deprivation (mothers' neglect of their infants) became known and was interpreted to include a lack of stimulation. A number of research studies followed that indicated a "more is better" approach in the stimulation of preterm infants. Today, however, experts on infant development argue that preterm infant care is far too complex to be described only in terms of amount of stimulation (Liaw, 2000).

Following are some conclusions about the situation of preterm infants (Lester & Tronick, 1990):

1. Preterm infants' responses to stimulation vary with their conceptual age, illness, and individual makeup. The immature brain of the preterm infant may be more vulnerable to excessive, inappropriate, or mistimed stimulation. The very immature infant should probably be protected from stimulation that could destabilize its condition.
2. As the healthy preterm infant becomes less fragile and approaches term, the issue of what is appropriate stimulation should be considered. Infants' behavioral cues can be used to determine appropriate interventions. An infant's signs of stress or avoidance behaviors indicate that stimulation should be terminated. Positive behaviors indicate that stimulation is appropriate.
3. Intervention with the preterm infant should be organized in the form of an individualized developmental plan. This plan should be constructed as a psychosocial intervention to include the parents and other immediate family members and to acknowledge the socioeconomic, cultural, and home environmental factors that will determine the social context in which the infant will be reared. The developmental plan should also include assessing the infant's behavior, working with the parents to help them understand the infant's medical and behavioral status, and helping the parents deal with their own feelings. The Caring for Children box provides further information about the stimulation of infants.

Now that we have studied a number of ideas about preterm infants and ways that they can be helped, let's turn our attention to the way that the newborn's health and responsiveness are assessed.

MEASURES OF NEONATAL HEALTH AND RESPONSIVENESS

Measures of Neonatal Health and Responsiveness

Apgar Scale

A widely used method to assess the health of newborns at one and five minutes after birth. The Apgar Scale evaluates infants' heart rate, respiratory effort, muscle tone, body color, and reflex irritability.

The **Apgar Scale** is a method widely used to assess the health of newborns at one and five minutes after birth. The Apgar Scale evaluates infants' heart rate, respiratory effort, muscle tone, body color, and reflex irritability. An obstetrician or a nurse does the evaluation and gives the newborn a score, or reading, of 0, 1, or 2 on each of these five health signs

CARING FOR CHILDREN

The Power of Touch and Massage in Development

THERE HAS BEEN a recent surge of interest in the roles of touch and massage in improving the growth, health, and well-being of infants and children (Cullen & others, 2001; Dieter & others, 2001). This interest has been stimulated by the research of Tiffany Field (1998, 2001), director of the Touch Research Institute at the University of Miami School of Medicine. In one investigation, 40 preterm infants who had just been released from an intensive care unit and placed in a transitional nursery were studied (Field, Scafidi, & Schanberg, 1987). Twenty of the preterm babies were given special stimulation with massage and exercise for three 15-minute periods at the beginning of 3 consecutive hours every morning for 10 weekdays. For example, each infant was placed on its stomach and gently stroked. The massage began with the head and neck and moved downward to the feet. It also moved from the shoulders down to the hands. The infant was then rolled over. Each arm and leg was flexed and extended; then both legs were flexed and extended. Next, the massage was repeated.

The massaged and exercised preterm babies gained 47 percent more weight than their preterm counterparts who were not massaged and exercised, even though both groups had the same number of feedings per day and averaged the same intake of formula. The increased activity of the massaged, exercised infants would seem to work against weight gain. However, similar findings have been discovered with animals. The increased activity may increase gastrointestinal and metabolic efficiency. The massaged infants were more active and alert, and they performed better on developmental tests. Also, their hospital stays were about six days shorter than those of the non-massaged, nonexercised group, which saved about \$3,000 per preterm infant.



Shown here is Tiffany Field massaging a newborn infant. *What types of infants has massage therapy been shown to help?*

Field has recently replicated these findings with preterm infants in another study.

In another study, Field (1992) gave the same kind of massage (firm stroking with the palms of the hands) to preterm infants who were exposed to cocaine in utero. The infants also showed significant weight gain and improved scores on developmental tests. In another study, 28 newborns born to HIV-positive mothers were randomly assigned to massage therapy or to a control group (Scafidi & Field, 1996). The treatment-group infants were given three 15-minute massages daily for 10 days. The massaged group showed superior performance on a wide range of infant assessments, including daily weight gain. Field also has conducted a number of studies of infants born to depressed mothers. In one study, Field and her colleagues (Field, Grizzle, & others,

1996) investigated 1- to 3-month-old infants born to depressed adolescent mothers. The infants were given 15 minutes of either massage or rocking for 2 days per week for a 6-week period. The infants who received massage therapy had lower stress, as well as improved emotionality, sociability, and soothability, when compared with the rocked infants. Field and her colleagues also have demonstrated the benefits of massage therapy with women in reducing their labor pain (Field, Hernandez-Reif, Taylor, & others, 1997), with children who have arthritis (Field, Hernandez-Reif, Seligman, & others, 1997), with children who have asthma (Field & others, 1998a), with autistic children's attentiveness (Field, Lasko, & others, 1997), with alleviating stress in children following a hurricane (Field, Seligman, & others, 1996), and with adolescents who have attention deficit hyperactivity disorder (Field, & others, 1998b).

(see figure 5.2 on page 142). A total score of 7 to 10 indicates that the newborn's condition is good. A score of 5 indicates there may be developmental difficulties. A score of 3 or below signals an emergency and indicates that the baby might not survive. The Apgar Scale is especially good at assessing the newborn's ability to respond to the stress of delivery, labor, and the new environment. (Butterfield, 1999). The Apgar Scale also identifies high-risk infants who need resuscitation.

	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



Figure 5.2
The Apgar Scale

In one recent study, Apgar results from more than 145,000 babies born across a decade were analyzed (Casey, McIntire, & Leveno, 2001). Based on scores obtained five minutes after birth, the Apgar was an excellent predictor of which infants would survive or die in the first month of life.

To evaluate the newborn more thoroughly, the **Brazelton Neonatal Behavioral Assessment Scale** is performed within 24 to 36 hours after birth to evaluate the newborn's neurological development, reflexes, and reactions to people. When the Brazelton is given, the newborn is treated as an active participant, and the score attained is based on the newborn's best performance. Sixteen reflexes, such as sneezing, blinking, and rooting, are assessed, along with reactions to circumstances, such as the infant's reaction to a rattle. (We will have more to say about reflexes in chapter 6, when we discuss physical development in infancy.) The examiner rates the newborn on each of 27 categories (see figure 5.3). As an indication of how detailed the ratings are, consider item 15: "cuddliness." Nine categories are involved in assessing this item, with infant behavior scored on a continuum that ranges from the infant's being very resistant to being held to the infant's being extremely cuddly and clinging. The Brazelton scale not only is used as a sensitive index of neurological competence in the week after birth, but it also is used widely as a measure in many research studies on infant development (Lundgrist & Sabel, 2000). In scoring the Brazelton scale, T. Berry Brazelton and his colleagues (Brazelton, Nugent, & Lester, 1987) categorize the 27 items into four categories—physiological, motoric, state, and interaction. They also classify the baby in

1. Response decrement to repeated visual stimuli
2. Response decrement to rattle
3. Response decrement to bell
4. Response decrement to pinprick
5. Orienting response to inanimate visual stimuli
6. Orienting response to inanimate auditory stimuli
7. Orienting response to inanimate visual and auditory stimuli
8. Orienting response to animate visual stimuli—examiner's face
9. Orienting response to animate auditory stimuli—examiner's voice
10. Orienting response to animate visual and auditory stimuli
11. Quality and duration of alert periods
12. General muscle tone—in resting and in response to being handled, passive, and active
13. Motor activity
14. Traction responses as the infant is pulled to sit
15. Cuddliness—responses to being cuddled by examiner
16. Defensive movements—reactions to a cloth over the infant's face
17. Consolability with intervention by examiner
18. Peak of excitement and capacity to control self
19. Rapidity of buildup to crying state
20. Irritability during examination
21. General assessment of kind and degree of activity
22. Tremulousness
23. Amount of startling
24. Lability of skin color—measuring autonomic lability
25. Lability of states during entire examination
26. Self-quieting activity—attempts to console self and control state
27. Hand-to-mouth activity

Figure 5.3

The 27 Categories on the Brazelton Neonatal Behavioral Assessment Scale (NBAS)

global terms, such as “worrisome,” “normal,” or “superior,” based on these categories (Nugent & Brazelton, 2000).

A very low Brazelton score can indicate brain damage, or it can reflect stress to the brain that may heal in time. However, if an infant merely seems sluggish in responding to social circumstances, parents are encouraged to give the infant attention and become more sensitive to the infant’s needs. Parents are shown how the newborn can respond to people and how to stimulate such responses. Researchers have found that the social interaction skills of both high-risk infants and healthy, responsive infants can be improved through such communication with parents (Worobey & Belsky, 1982).

Brazelton Neonatal Behavioral Assessment Scale

A test performed within 24 to 36 hours after birth to assess newborns’ neurological development, reflexes, and reactions to people.

Since our last review we have studied many aspects of preterm infants and age/weight considerations, as well measures of neonatal health and responsiveness. The review on the preceding pages should help you reach your learning goals related to these topics.

FOR YOUR REVIEW

Learning Goal 4 Describe Low Birth Weight Infants

- **Low birth weight infants** weigh less than 5½ pounds. Low birth weight babies may be **preterm** (born 3 weeks or more before the pregnancy has reached full term) or **small for date** (also called small for gestational age, which refers to infants whose birth weight is below normal when the length of pregnancy is considered). **Small for date infants** may be preterm or full term.
- Although most low birth weight babies are normal and healthy, as a group they have more health and developmental problems than full-term babies. The number and severity of the problems increases as birth weight decreases.
- Preterm infant care is much too complex to only be described in terms of amount of stimulation. Preterm infants’ responses vary according to their conceptual age, illness, and individual makeup. Intervention should be organized in the form of an individualized developmental plan. Massage therapy is increasingly being used with preterm infants.

Learning Goal 5 Know What Measures Are Used to Assess Neonatal Health and Responsiveness

- For many years, the **Apgar Scale** has been used to assess the newborn’s health. It is used one and five minutes after birth and assesses heart rate, respiratory effort, muscle tone, body color, and reflex irritability.
- The **Brazelton Neonatal Behavioral Assessment** is performed within 24 to 36 hours after birth to examine the newborn’s neurological development, reflexes, and reactions to people.

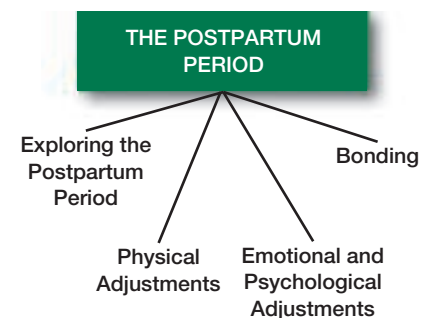
So far in this chapter we have examined many aspects of the birth process. Next, we will explore what happens after birth in the postpartum period.

The Postpartum Period

Many health professionals believe that the best postpartum care is family centered, using the family’s resources to support an early and smooth adjustment to the newborn by all family members. What is the postpartum period?

Exploring the Postpartum Period

The **postpartum period** is the period after childbirth or delivery. It is a time when the woman’s body adjusts, both physically and psychologically, to the process of childbearing. It lasts for about six weeks or until the body has completed its adjustment and has returned to a near-prepregnant state. Some health professionals refer to the postpartum period as



postpartum period

The period after childbirth when the mother adjusts, both physically and psychologically, to the process of childbirth. This period lasts for about six weeks, or until her body has completed its adjustment and has returned to a near-prepregnant state.

involution

The process by which the uterus returns to its prepregnant size.



The postpartum period is a time of considerable adjustment and adaptation for both the mother and the father. *What are some of these adjustments?*

the “fourth trimester.” While the time span of the postpartum period does not necessarily cover three months, the terminology of “fourth trimester” demonstrates the idea of continuity and the importance of the first several months after birth for the mother.

The postpartum period is influenced by what preceded it (Lydon-Rochelle & others, 2001) ◀ P. 117. During pregnancy, the woman’s body gradually adjusted to physical changes, but now it is forced to respond quickly. The method of delivery and circumstances surrounding the delivery affect the speed with which the woman’s body readjusts during the postpartum period.

The postpartum period involves a great deal of adjustment and adaptation. The baby has to be cared for; the mother has to recover from childbirth; the mother has to learn how to take care of the baby; the mother needs to learn to feel good about herself as a mother; the father needs to learn how to take care of his recovering wife; the father needs to learn how to take care of the baby; and the father needs to learn how to feel good about himself as a father.

Physical Adjustments

The woman’s body makes numerous physical adjustments in the first days and weeks after childbirth. She may have a great deal of energy or feel exhausted and let down. Most new mothers feel tired and need rest. Though these changes are normal, the 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.

Involution is the process by which the uterus returns to its prepregnant size five or six weeks after birth. Immediately following birth, the uterus weighs 2 to 3 pounds, and the fundus can be felt midway between the naval and the pubic bone. By the end of five or six weeks, the uterus weighs 2 to 3½ ounces and it has returned to its prepregnancy size. Nursing the baby helps contract the uterus at a rapid rate.

After delivery, a woman’s body undergoes sudden and dramatic changes in hormone production. When the placenta is delivered, estrogen and progesterone levels drop steeply and remain low until the ovaries start producing hormones again. The woman will probably begin menstruating again in four to eight weeks if she is not breast-feeding. If she is breast-feeding, she might not menstruate for several months, though ovulation can occur during this time. The first several menstrual periods following delivery may be heavier than usual, but periods soon return to normal.

Some women and men want to resume sexual intercourse as soon as possible after the birth. Others feel constrained or afraid. A sore perineum (the area between the anus and vagina in the female), a demanding baby, lack of help, and extreme fatigue affect a woman’s ability to relax and to enjoy making love. Physicians often recommend that women refrain from having sexual intercourse for approximately six weeks following the birth of the baby. However, it is probably safe to have sexual intercourse when the stitches heal, vaginal discharge stops, and the woman feels like it.

If the woman regularly engaged in conditioning exercises during pregnancy, exercise will help her recover her former body contour and strength during the postpartum period. With a caregiver’s approval, the woman can begin some exercises as soon as one hour after delivery. In addition to recommending exercise in the postpartum period for women, health professionals also increasingly recommend that women practice the relaxation techniques they used during pregnancy and childbirth. Five minutes of slow breathing on a stressful day in the postpartum period can relax and refresh the new mother, as well as the new baby.

Emotional and Psychological Adjustments

Emotional fluctuations are common on the part of the mother in the postpartum period. These emotional fluctuations may be due to any of a number of factors: hormonal changes, fatigue, inexperience or lack of confidence with newborn babies, or the extensive time and demands involved in caring for a newborn. For some women, the emotional fluctuations decrease within several weeks after the delivery and are a minor aspect of their motherhood. For others, they are more long-lasting and may produce feelings of anxiety, depression, and difficulty in coping with stress. Mothers who have such feelings, even when they are getting adequate rest, may benefit from professional help in dealing with their problems (O'Hara & others, 2000). Following are some of the signs that may indicate a need for professional counseling about postpartum adaptation:

- Excessive worrying
- Depression
- Extreme changes in appetite
- Crying spells
- Inability to sleep

A special concern of many new mothers is whether they should stay home with the baby or go back to work. Some mothers want to return to work as soon as possible after the infant is born; others want to stay home with the infant for several months, then return to work; others want to stay home for a year before they return to work; and yet others did not work outside the home prior to the baby's arrival and do not plan to do so in the future.

Many women, because of a variety of pressures—social, career, financial—do not have the option of staying at home after their babies are born (Eisenberg, Murkoff, & Hathaway, 1989). However, for women who have to make the choice, the process of decision making is often difficult and agonizing (Delmore-Ko & others, 2000).

The father also undergoes considerable adjustment in the postpartum period, although in many cases he will be away at work all day, whereas the mother will be at home, at least in the first few weeks (Morse, Buist, & Durkin, 2000). One of the most common reactions of the husband is the feeling that the baby comes first and gets all of the attention. In some marriages, the man may have had that relationship with his wife and now feels that he has been replaced by the baby.

One strategy to help the man's postpartum reaction is for the parents to set aside some special time to be together with each other. The father's postpartum reaction also likely will be improved if he has taken childbirth classes with his wife and is an active participant in caring for the baby.

Important factors for both the mother and the father are the time and thought that go into being a competent parent of a young infant. It is important for both the mother and the father to become aware of the young infant's developmental needs—physical, psychological, and emotional. Both the mother and the father need to develop a sensitive, comfortable relationship with the baby. We will have more to say about the transition to parenting and the mother's and father's role in infant development in chapter 8. To further evaluate the postpartum period, see the Thinking Critically insert.

Bonding

A special component of the parent-infant relationship is **bonding**, *the occurrence of close contact, especially physical, between parents and newborn in the period shortly after birth*. Some physicians believe that this period shortly after birth is critical in



Postpartum Adjustment Mothers, Fathers, and Newborns Postpartum Resources



THINKING CRITICALLY

Evaluate the Postpartum Period

GET TOGETHER with several other students in the class, making sure that the group includes at least one or more females and one or more males. After reading the material on the postpartum period, discuss your views on

- The most important adjustments the mother and father will have to make in their lives because of the newborn baby.
- Whether the mother should stay home with the baby or go back to work. If you think she should stay home, how long should she stay home with the baby before returning to work?
- The ways parents can help each other in adapting to the newborn baby in their lives.

bonding

Close contact, especially physical, between parents and their newborn in the period shortly after birth.

CAREERS IN CHILD DEVELOPMENT

Diane Sanford, *Clinical Psychologist and Postpartum Expert*

DIANE SANFORD has a doctorate in clinical psychology and never set out to become a specialist in women's health. For many years she had a private practice in clinical psychology with a focus on marital and family issues. Then she began collaborating with a psychiatrist whose clients included women with postpartum depression.

For the last 14 years, Diane has specialized in postpartum problems and other related aspects of female development, including infertility, pregnancy loss, and menopause.

Diane provides clients with practical advice that she believes help women effectively cope with their problems. She begins by guiding them to think about concrete steps they can take to ease their emotional turmoil during this important postpartum transition. For example, new mothers may need help in figuring out ways to get partners and others to help with their infants. Or they may just need to be reassured that they can handle the responsibilities they face as parents.

After years of practicing on her own, Diane and a women's health nurse formed Women's Healthcare Partnership five years ago. In addition to the two partners, the staff now includes a full-time counselor in marriage and family relationships, and a social worker. Nurse educators, a dietician, and a fitness expert work on a consulting basis. Diane also has co-authored *Postpartum Survival Guide* (Dunnewold & Sanford, 1994), which reflects her strategies for helping women cope with postpartum issues.



Diane Sanford holding an infant of one of the mothers who comes to her for help in coping with postpartum issues.

development ◀ P. 49. During this time, the parents and child need to form an important emotional attachment that provides a foundation for optimal development in years to come (Kennell & McGrath, 1999). Special interest in bonding came about when some pediatricians argued that the circumstances surrounding delivery often separate mothers and their infants, preventing or making difficult the development of a bond. The pediatricians further argued that giving the mother drugs to make her delivery less painful may contribute to the lack of bonding. The drugs may make the mother drowsy, thus interfering with her ability to respond to and stimulate the newborn. Advocates of bonding also assert that preterm infants are isolated from their mothers to an even greater degree than are full-term infants, thereby increasing their difficulty in bonding.

Is there evidence that such close contact between mothers and newborns is critical for optimal development later in life? Although some research supports the bonding hypothesis (Klaus & Kennell, 1976), a body of research challenges the significance of the first few days of life as a critical period (Bakeman & Brown, 1980; Rode & others, 1981). Indeed, 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.

Nonetheless, the weakness of the maternal-infant bonding research should not be used as an excuse to keep motivated mothers from interacting with their infants in the postpartum period. Such contact brings pleasure to many mothers. In some mother-infant pairs—including preterm infants, adolescent mothers, or mothers from disadvantaged circumstances—the practice of bonding may set in motion a climate for improved interaction after the mother and infant leave the hospital.

In recognition of the belief that bonding may have a positive effect on getting the parental-infant relationship off to a good start, 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. However, if parents choose not to use this rooming-in arrangement, the weight of the research evidence suggests that it will not harm the infant emotionally (Lamb, 1994).



A mother bonds with her infant moments after it is born. *How critical is bonding for the development of social competence later in childhood?*

Since the last review we have examined many aspects of the postpartum period. This review should help you to reach your learning goal related to this topic.

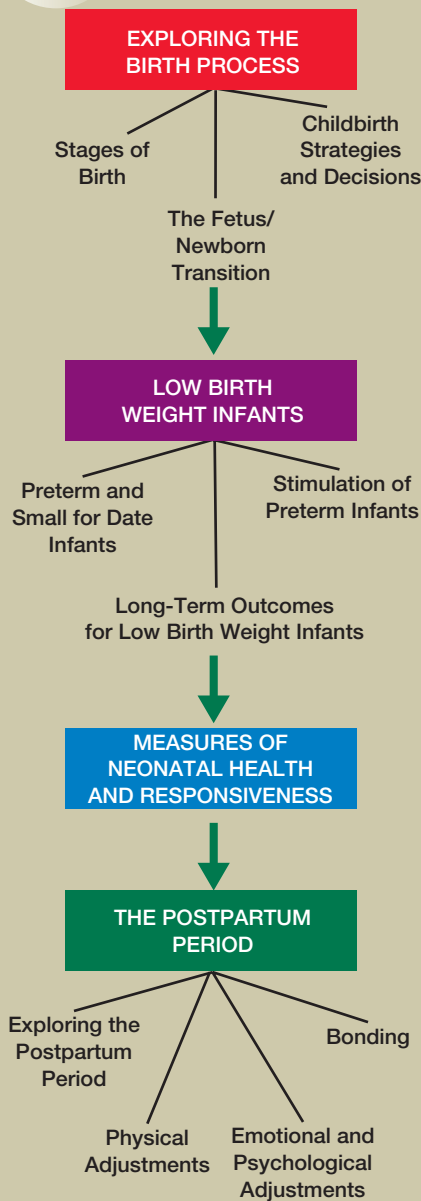
FOR YOUR REVIEW

Learning Goal 6 Discuss the Postpartum Period

- The **postpartum period** is the period after childbirth or delivery. It is a time when the woman adjusts, both physically and psychologically, to the process of childbearing. It lasts for about six weeks or until the body has completed its adjustment.
- Physical adjustments include fatigue, **involution**, hormonal change that include a dramatic drop in estrogen and progesterone, consideration of when to resume sexual intercourse, and exercise to recover former body contour and strength.
- The mother's emotional fluctuation is common in the postpartum period. These fluctuations may be due to hormonal changes, fatigue, inexperience or lack of confidence in caring for a newborn, or the extensive demands involved in caring for a newborn. For some, these fluctuations are minimal and disappear in several weeks, but for others they can be more long-lasting. The father also goes through a postpartum adjustment. Another adjustment for both the mother and the father is the time and thought that go into being a competent parent of a young infant.
- **Bonding** refers to the occurrence of close contact, especially physical, between parents and the newborn shortly after birth. Bonding has not been found to be critical in the development of a competent infant or child, although it may stimulate positive interaction between some mother-infant pairs.

In this section of the book (2) "Biological Beginnings," you have studied about the roles of heredity and environment in development, examined prenatal development, and explored the birth process. In the next major section of the book, you will read about the infant's development, beginning with chapter 6, "Physical Development in Infancy."

Chapter Map



Reach Your Learning Goals

At the beginning of the chapter, we stated six learning goals and encouraged you to review material related to the learning goals at four points in the chapter. This is a good time to return to those reviews and use them to organize your study of this chapter and guide you in reaching your learning goals.

Page 132

Learning Goal 1 Describe the Stages of Birth

Learning Goal 2 Discuss the Fetus/Newborn Transition

Page 138

Learning Goal 3 Distinguish Different Childbirth Strategies

Page 143

Learning Goal 4 Describe Low Birth Weight Infants

Learning Goal 5 Know What Measures Are Used to Assess Neonatal Health and Responsiveness

Page 147

Learning Goal 6 Discuss the Postpartum Period

Key Terms

afterbirth 130

anoxia 130

doula 133

analgesia 134

anesthesia 134

oxytocics 134

natural childbirth 134

prepared childbirth 134

cesarean delivery 135

breech position 135

low birth weight infant 138

preterm infants 139

small for date (small for gestational age) infants 139

Apgar Scale 140

Brazelton Neonatal Behavioral Assessment Scale 142

postpartum period 143

involution 144

bonding 145

Key People

Grantley Dick-Read 134

Ferdinand Lamaze 134

Tiffany Field 141

T. Berry Brazelton 142

Making a Difference

Some Good Birth Strategies

Following are some birth strategies that may benefit the baby and the mother:

- *Take a childbirth class.* These classes provide information about the childbirth experience.
- *Become knowledgeable about different childbirth techniques.* We described a number of different childbirth techniques in this chapter, including Lamaze and using doulas. Obtain more detailed information about such techniques by reading a good book, such as *Pregnancy & Childbirth* (1997) by Tracie Hotchner.
- *At-risk infants can benefit from positive intervention.* Massage can improve the developmental outcome of at-risk infants. Intensive enrichment programs that include medical, educational, psychological, occupational, and physical domains can benefit low birth weight infants. Intervention with low birth weight infants should involve an individualized plan.
- *Involve the family in the birth process.* If they are motivated to participate, the husband and siblings can benefit from being involved in the birth process. A mother, sister, or friend can also provide support.
- *Know about the adaptation required in the postpartum period.* The postpartum period involves considerable adaptation and adjustment by the mother. This adjustment is both physical and emotional. Exercise and relaxation techniques can benefit mothers in the postpartum period. So can an understanding, supportive husband.



Children Resources

ASPO/Lamaze

1840 Wilson Boulevard, Suite 204
Arlington, VA 22201

This organization provides information about the Lamaze method and taking or teaching Lamaze classes.

Birth: Issues in Perinatal Care

This multidisciplinary journal on perinatal care is written for health professionals and contains articles on research and clinical practice, review articles, and commentary.

Cesareans/Support, Education, and Concern

22 Forest Road
Framingham, MA 01701
508-877-8266

This organization provides information and advice about cesarean birth.

Postpartum Support International

927 North Kellogg Avenue
Santa Barbara, CA 93111
805-967-7636

This organization provides information about postpartum depression.

La Leche League International

9616 Minneapolis Avenue
Franklin Park, IL 60131
800-LA-LECHE

This organization provides information about the benefits of breast-feeding. It also publishes the very thorough book *The Womanly Art of Breastfeeding* (New York: Plume, 1991).



Taking It to the Net <http://www.mhhe.com/santrock7>

1. Samara and Aaron are having their first baby. Samara's mother insists that she have her baby in the hospital; on the other hand, several of Samara's friends have suggested she look into having her baby at a birthing center. *What services do these facilities offer? What are the advantages and disadvantages of each?*
2. Carmen, who is six months pregnant, has suffered periods of major depression throughout her adult life. Both her doctor and her obstetrician have voiced concern about the risk of depression after Carmen gives birth. *What are the signs and symptoms of postpartum depression? What factors are likely to place a woman at higher risk of suffering from this disorder?*
3. Colleen's baby was born eight weeks prematurely. The infant was born addicted to cocaine. Her baby has received extensive intervention since birth, although Colleen is very worried about the possible developmental ramifications of prematurity and cocaine addition. *Are premature infants at risk of physical and/or psychological problems later in life? Are there any interventions that might reduce developmental risks?*

Connect to <http://www.mhhe.com/santrock7> to research the answers and complete the exercises.