Childbirth Options

Years ago, most babies were born at home. Mothers didn’t have the option of going to a hospital or the availability of today’s lifesaving technology. Today, there are a variety of options for childbirth. With the help of their doctor, expectant parents can choose the best possible birth situation for the mother and baby.

Objectives

- Compare and contrast the qualifications of health care professionals who deliver babies.
- Outline ways expectant parents can prepare for birth.
- Analyze the benefits of childbirth classes.
- Evaluate the benefits and drawbacks of the different types of delivery.

Key Terms

- prepared childbirth
- labor
- delivery
- midwife
- alternative birth center

What Is Prepared Childbirth?

Prepared childbirth involves reducing pain and fear during the birth process through education and breathing and conditioning exercises. Many expectant parents attend childbirth education classes to help them prepare for labor—the process by which the baby gradually moves out of the uterus and into the vagina to be born—and delivery—the birth itself. The father—or someone else who can support the mother during birth—functions as a “coach” for the mother.

Childbirth education classes may be offered by hospitals, health care providers, and private teachers. In addition to learning breathing techniques, participants learn so much more, including the following:

- How the baby develops throughout pregnancy.
- Warning signs that may indicate a potentially serious problem during pregnancy.
- What to expect during labor and delivery, including the stages of labor.
- The role of the coach.
- Breathing and conditioning exercises to make pregnancy, labor, and delivery more comfortable, including pain relief.

SECTION LAUNCHER

Ask students what prepared childbirth is. How might parents benefit from childbirth classes? Identify alternatives parents have when deciding where the baby will be born.

Vocabulary Development

Make Word Connections. One of the six steps to learning a new word is to connect context clues and other concepts with the word. Write prepared childbirth on the board. As a class, discuss possible definitions. Record responses on the board. Read the word in context on page 171. Together create a definition and write it on the board. Then tell students that Fernand Lamaze introduced in the 1950s a method of prepared childbirth that became popular. The Lamaze method emphasizes learning about the stages of labor and distraction techniques to reduce tension and fear during labor and delivery.
How to make a plan for the labor and delivery, also called a birth plan. This tells the medical staff what the couple would like to have happen throughout the childbirth process, including the possible use of pain medication.

Who Will Deliver the Baby?

The following health care professionals are qualified to deliver babies:

- **Obstetricians.** Because these doctors specialize in the care of mothers and babies both before and right after birth, they are qualified to handle any emergencies or complications.
- **Family doctors.** Some family doctors provide prenatal care and deliver babies. If complications arise, however, they may call in an obstetrician.
- **Licensed midwives.** A midwife is trained to assist women in childbirth. There are two types of midwives: certified nurse-midwives (CNMs) and certified midwives. CNMs are registered nurses. Both have advanced training in normal pregnancy and birth and must pass a certification exam before they can practice.

Birth Plans. Making decisions while rushing to the hospital or in the middle of labor is not what expectant mothers want to do. That is why new parents are encouraged to make birth plans. A birth plan usually covers the following: pain relief options; birthing positions; who will accompany the mother; treatment of the baby after birth; and what to do in case of an emergency.

1. Which health-care professional is the most qualified to handle childbirth emergencies or complications? (An obstetrician)
2. How do midwives become licensed? (They must pass a certification exam)
3. What problems may occur during delivery? (A baby’s umbilical cord may become compressed)
4. How are alternative birth centers different from hospitals? (They provide a more homelike environment; they emphasize prepared, natural childbirth; they don’t offer pain medication. Midwives generally handle births. They charge less. Parents and baby typically leave after 24 hours)

How can taking a class help reduce expectant parents’ fears?

1. Which health-care professional is the most qualified to handle childbirth emergencies or complications? (An obstetrician)
2. How do midwives become licensed? (They must pass a certification exam)
3. What problems may occur during delivery? (A baby’s umbilical cord may become compressed)
4. How are alternative birth centers different from hospitals? (They provide a more homelike environment; they emphasize prepared, natural childbirth; they don’t offer pain medication. Midwives generally handle births. They charge less. Parents and baby typically leave after 24 hours)

Kinesthetic Learners. After gaining parental permission: Invite a Lamaze coach or Bradley method instructor to show students a video of a childbirth education class. Have students actively take part in the breathing and other exercises. Afterward, involve students in a discussion about the benefits pregnant women would experience if they were to use some of these methods.
Where Will the Baby Be Born?

It is only in the last 100 years that most babies have been born in hospitals. Some women still choose a home birth. However, for safety’s sake, this option is only possible for women with uncomplicated pregnancies and a low risk of complications during delivery. Unfortunately, it is not possible to know what problems might arise. For example, a baby’s umbilical cord may become compressed, threatening the baby’s oxygen supply. No one can predict these types of problems. Newborns born at home are twice as likely to die as those born in hospitals. The mother is also at higher risk with a home birth. If a woman does decide on this option, medical personnel should be notified in advance of the birth.

Some couples choose alternative birth centers that are not part of hospitals. These centers provide a more homelike environment for labor and delivery. These centers emphasize prepared, natural childbirth and do not offer pain medication during labor. Midwives generally handle births in these centers. Most accept only mothers at low risk of complications. A nearby hospital is on call to handle any problems that may develop. These centers typically charge less than hospitals do. Time spent at the facility is usually shorter. Parents and their baby typically leave the center within 24 hours if there are no complications.

Depending on health insurance and other issues, new mothers and their babies may spend two to three days in a hospital if the delivery was routine and up to a week if there are complications. The government requires insurance companies to cover at least two days in the hospital after delivery for women who have routine, vaginal births.

With books about childbirth piled around their house and friends and family calling to offer advice, Gabrielle and Antoine, who are expecting a baby in four months, are feeling overwhelmed. Gabrielle wants to have a natural childbirth, but she is worried about the pain. She and Antoine haven’t decided where to have the baby. They recently toured a birthing center at a nearby hospital that was comfortably furnished with a large bed, living area, and even kitchen facilities. There was even a place for Antoine to sleep in the same room as Gabrielle and the baby. Another hospital a little further away, however, offered tubs for water birth in its birthing center. A nurse told Gabrielle that the warm water relaxes the muscles and takes the weight off the mother’s back and hips during birth. The nurse said that she thought the water worked as well as drugs in certain women. The nurse explained what kinds of anesthesia were available, too. At the end of the visit, Gabrielle and Antoine chose the second hospital for the baby’s birth. Gabrielle was reconsidering anesthesia. She would try to give birth without it, but she wouldn’t consider it a setback if she had to take something for her pain.

**PERSONAL APPLICATION**

Where can you learn about childbirth options that are available in your area?

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**Communication Skills**

Childbirth Decisions. Parents should consider all their options when making decisions about childbirth. Yet, choices of childbirth methods can vary greatly. Have students create a questionnaire for parents to fill out in order to narrow down their options and find the type that meets their needs. For example, one question might read: Do you believe in natural childbirth? or Would you like pain relief available to you if you should need it? Have students discuss how knowing specifically what one wants can lead to making a good decision.
Trained personnel, sanitary conditions, and the presence of high-tech medical equipment make hospital births safer than home births. Hospitals may offer several types of services to meet the needs of expectant parents, including:

- Classes that prepare parents for delivery and infant care.
- Programs for young siblings and expectant fathers.
- Private rooms that provide soft lighting, music, and comfortable furniture. Mothers and their families can stay in these rooms for labor, delivery, and recovery, unless complications arise. Additional medical equipment is kept out of sight but is ready for immediate use.
- The option for mother and baby to room together during their time in the hospital.

When making a decision about where to have their baby, expectant parents should explore the hospitals in their area. Their options may be limited by their health insurance or by which hospital their doctor uses, so they need to investigate this as well. Many hospitals offer tours and will gladly discuss concerns and special needs.

Couples should discuss the benefits and drawbacks of each type of delivery with each other and with their doctor.

### Reviewing Section 5-3

#### Checking Comprehension
Have students complete the Section 5-3 Review and Activities.

#### Reteaching
Have students quiz each other about the childbirth options covered in this section.

#### Enrichment
Have students research water births and how they are conducted.

### Review Answers

1. **Prepared childbirth** is education, breathing, and conditioning exercises meant to reduce pain and fear during the birth process.

2. Breathing and conditioning techniques; child development information; pregnancy complications; stages of labor and what to expect during labor; role of the coach.

3. Obstetricians are doctors who specialize in the care of mothers and babies before and right after birth; qualified to handle any emergencies or complications. Family doctors may provide prenatal care and deliver babies; may call in an obstetrician if complications arise. Licensed midwives are professionals who receive advanced training in normal pregnancy and birth.

4. **Alternative birth centers** provide a homelike environment for labor and delivery. **Advantage:** typically charge less than hospitals do. **Disadvantage:** most only accept mothers at low risk of complications. Hospitals provide a high-tech medical environment. **Advantage:** medical equipment and personnel who can handle possible problems quicker than an alternative birth center. **Disadvantage:** more expensive than alternative birth centers.

5. There are problems that may occur at birth that cannot be predicted. An infant born at home is twice as likely to die as one born in a hospital.
Obstetric Sonographer

When a pregnant woman has an ultrasound, radio waves are used to make pictures of her baby’s soft tissues. This can show whether a baby is male or female, and whether the fetus’s spine and internal organs are developing properly. Obstetric sonographers perform ultrasounds and other scans.

Job Responsibilities
Obstetric sonographers review their patients’ medical histories, perform ultrasound scans, and talk to doctors about the results. Strength is required to help pregnant women on and off of the table they lie on during scans.

Work Environment
Sonographers work in hospitals and doctors’ offices. After several years of work experience, sonographers may become administrators in medical imaging departments.

Education and Training
Many obstetric sonographers hold a bachelor’s or associate’s degree. Others take a year-long course in obstetric sonography to earn a certificate. Some courses of study are designed for people from other areas of health care who are changing fields. Courses in diagnostic medical sonography include classes in anatomy, physics, patient care, and medical ethics.

Skills and Aptitudes
- Attention to detail
- Physical strength
- Strong interpersonal abilities
- Ability to work on a medical team

Workplace Connection

1. Thinking Skills. How would having medical experience help you get a job as an obstetric sonographer?
2. Resource Skills. How could you get experience working with pregnant women?

Introducing the Feature
Ask students if they know what obstetric sonography is. Allow them to speculate what types of responsibilities and duties an obstetric sonographer might have.

Applied Learning
After reading the feature, ask students to think of other characteristics that obstetric sonographers probably need.
(Possible responses: ability to explain medical information to patient; technologically inclined; strong decision-making skills)

Career Research
Have students research training in obstetric sonography on the Internet. Have students record the number of years of schooling and other experiences people need to become obstetric sonographers.
SECTION SUMMARIES

- A woman should see a doctor once she thinks she is pregnant and receive regular prenatal care during her pregnancy. (5-1)
- Good nutrition, moderate exercise, and stress management are essential to the health of both the developing baby and the mother during pregnancy. (5-1)
- Expectant parents should prepare their home for the birth of the child and have basic supplies ready. (5-2)
- Expectant parents need to figure out how they will balance their lives after the baby is born. (5-2)
- Prepared childbirth helps expectant parents get ready for labor and delivery. (5-3)
- Expectant parents have to choose who will help deliver their baby and where the baby will be born. (5-3)

REVIEWING THE CHAPTER

1. What is prenatal care and why is it so important? (5-1)
2. What is the Rh factor and why is it important? (5-1)
3. What role do calcium and iron play in the diet? (5-1)
4. Why should pregnant women eat a variety of nutritious food? (5-1)
5. Why should expectant parents interview pediatricians? (5-2)
6. How can parents save money on basic baby supplies? (5-2)
7. What are maternity and paternity leave? (5-2)
8. What factors should expectant parents consider in determining whether both parents will work? (5-2)
9. What are alternative birth centers? (5-3)
10. Why might it be safer to have a baby in a hospital instead of at home? (5-3)

THINKING CRITICALLY

1. Drawing Conclusions. Why do you think older siblings might have trouble accepting a new baby?
2. Making Inferences. Why do some pregnant women choose an alternative birth center over a hospital?

7. Maternity and paternity leave are time that a parent takes off from work in order to care for a new baby.
8. Answers may vary. Parents should consider whether they can live on one income; what child care options are available and what their costs are.
9. They are more homelike environments for labor and delivery that emphasize prepared, natural childbirth. They do not offer pain medication during labor, and midwives generally handle births there. Most only accept mothers at low risk of complications, and most charge less than a hospital.
10. It might be safer to have a baby in the hospital in case unforeseen complications arise that might need immediate care and high-tech medical equipment.
MAKING CONNECTIONS

1. **Writing.** Imagine you are the father or mother of a new baby. Write a letter to your child to read when she or he is older describing what you did to keep the baby safe and healthy during pregnancy.

2. **Math.** Determine the cost of bottle-feeding a newborn for the first month, assuming a newborn eats three ounces of formula every two hours and that the formula costs $18.99 for a 25.7 ounce can.

APPLYING YOUR LEARNING

1. **Analyzing Behaviors.** Explain the importance of the following behaviors to the health and safety of pregnant women and their babies:
   - Getting enough folic acid
   - Avoiding alcohol
   - Getting exercise

2. **Interpersonal Skills.** Think about the kinds of highs and lows that women experience when pregnant. Imagine that your older cousin is pregnant, and she feels tired and uncomfortable. How might you help her to lift her spirits?

3. **Positive Messages.** Write a list of three things you could say to a pregnant woman to encourage her to eat a nutritious diet.

4. **Certified Nurse Midwives.** Search online for information about certified nurse midwives. What kind of training do they need? Why would someone choose a midwife over a doctor to deliver her baby?

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Learning from Research

1. Choose one of the research claims listed below to investigate.
2. How is this research useful to expectant mothers and their families?
3. Summarize what you have learned about how breast-feeding affects a baby’s health.

**Breast-feeding and the Brain.** Research has shown that certain amino acids—the building blocks of protein—in breast milk can help brain development. One day, these amino acids may be added to infant formula. What impact might this addition make on the practice of breast-feeding?

**Breast-feeding and Allergies.** The number of children with allergies has increased in the last 20 years. Studies have shown that being breast-fed reduces childhood allergies. Breast milk does this in part by coating the walls of the intestines and preventing the absorption of foreign substances that may cause allergic reactions. Give an example of an allergy that researchers believe has been reduced by breast-feeding.

**Breast-feeding and Obesity.** More children are overweight today than ever. As you will learn later, obesity in children is a problem with serious health consequences. Breast-feeding for the first six months of life has been shown to help prevent obesity in children. Explain why researchers believe this to be true.

Create and administer a Chapter 5 Test using the ExamView® Pro Test Generator.

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**Breast-feeding and the Brain.**

2. The finding that amino acids in breast milk aid in brain development may encourage mothers to breast-feed. If these amino acids were added to formula, fewer mothers might breast-feed.

3. Breast-feeding has many positive effects on a baby’s health. It provides many building blocks for physical growth. One of the fatty acids in breast milk may even enhance cognitive development.

**Breast-feeding and Allergies.**

2. This finding should encourage mothers to breast-feed their babies.

3. Food allergies appear to be reduced when babies are breast-fed. Breast-feeding appears to enhance a child’s health in many ways. According to a *Journal of Public Health* report from September 2004, the risk of asthma was reduced by 4 percent for each month of breast-feeding.

**Breast-feeding and Obesity**

2. Some investigators believe that breast milk may contain growth factors that inhibit body fat. Breast-fed babies may be better able to regulate their intake and stop eating when they are full. Doctors aren’t sure why breast-feeding babies helps prevent obesity. Some think it may have more to do with the mother’s lifestyle than with the fact that she breast-fed.

3. Breast-feeding has many benefits for a baby’s health, and helping prevent obesity later in life appears to be one of them.
CHAPTER OVERVIEW

Section 6-1 Labor and Birth
- Examines various stages of labor, cesareans, and premature births.

Section 6-2 The Newborn
- Discusses the topics of when the newborn arrives, examining the newborn, and later tests.

Section 6-3 The Postnatal Period
- Describes parents’ bonding with the baby, the hospital stay, as well as premature baby care and the mother’s postnatal care.

Thoughtful Reading:
As you read this chapter:
- Write down any questions you have about what you read.
- Identify at least three phrases that you question.
- Find answers in the text or in outside sources.

CONNECTIONS
Online

Recognizing Assumptions.
There are many assumptions about what childbirth is really like or how it feels. Have students name some assumptions they have heard and list them on the board. As you read, direct students back to these assumptions to analyze their truth.

Critical Thinking

Ask students to:
- Volunteer to list questions on the board that they still have after reading Chapter 6.
- Use index cards to list the phrases they questioned in each Section of Chapter 6. Collect the cards and respond to them so that students will understand the content of Chapter 6.
- Use their textbook and outside sources to locate answers to the questions they listed on the board about Chapter 6.

Section 6-1 Labor and Birth

Section 6-2 The Newborn

Section 6-3 The Postnatal Period

Thoughtful Reading: Ask students to investigate persistent pulmonary hypertension of the newborn, or PPHN, a life-threatening condition that is estimated to affect one baby in 700. What are the signs of the condition, and how is it treated? How does being born in a hospital affect these babies? What was the survival rate associated with PPHN twenty years ago, and what is it today?
Labor and Birth

Nine months is a long time to wait to hold a new baby. Many an expectant mother has felt as though her due date would never come. Finally, though, it does. A nervous, excited woman goes into labor, and her baby arrives. Giving birth is a powerful physical and emotional experience—one that leaves many new mothers feeling both exhausted and exhilarated.

Objectives
- Describe signs that indicate labor may have begun.
- Contrast false labor and premature labor.
- Summarize the three stages of labor.
- Explain what happens during a cesarean birth.
- List what factors can contribute to a premature birth.

Key Terms
- cervix
- contractions
- fetal monitoring
- dilate
- cord blood
- stem cells
- cesarean birth
- incubator

The Beginning of Labor

During the last few weeks of pregnancy, time seems to slow down. Many women become anxious for the baby to be born. During this time, they feel what is called lightening. This occurs when the baby settles deep in the pelvis near the time of birth. The pressure on the woman’s upper abdomen is reduced. With a first pregnancy, lightening may occur days or weeks before labor. A woman who has already had a baby may experience this change just before labor begins.

Early Signs of Labor

There are many signals that the baby is on its way. One is commonly called the “show” or “bloody show.” This refers to the few drops of blood or a pinkish vaginal stain that occurs when the mucus that plugs the uterus during pregnancy dissolves. This plug seals the cervix (SIR-viks), the lower part of the uterus, and prevents bacteria from moving into the uterus. This may occur as early as a few days prior to birth. Some women realize that they are in labor when they feel a trickle—or even a...
gush—of warm fluid from the vagina. This indicates that the membrane, or amniotic sac, holding the amniotic fluid surrounding the baby has broken. Often, the membrane does not rupture until much later in labor. This is what is meant when a woman says that her “water has broken.”

If the mother experiences this, she should note the time, the amount of fluid, and the color and odor of the fluid. She should call her doctor or midwife and report this information. Once the membrane has broken, delivery should be within 24 to 48 hours to protect the baby from infection.

Contractions, the tightening and releasing of the muscles of the uterus, are also signs of labor. When the uterus contracts, it shortens and closes, pushing the fetus against the cervix. Then the uterus relaxes before the next contraction. This is why contractions may last a few minutes. Earlier in labor, the period between them is longer. This time gets shorter as labor advances. See Fig. 6-1.

Mothers often report that contractions are painful but bearable. There is time between them to rest and recover. After the baby is born and the placenta is also pushed out, contractions end and there is no lingering pain.

As labor and contractions begin, the baby’s heart can be monitored. Fetal monitoring, watching the baby’s heart rate for indicators of stress, is usually done during labor and birth. There are different types of fetal monitoring, though one of the most common methods is done by using an ultrasound device. This method provides a beat-to-beat picture of the baby’s heart in relationship to the mother’s contractions.

Premature Labor

A full-term pregnancy usually lasts 40 weeks, although giving birth a week or two earlier or later is still considered normal. Premature, or preterm, labor occurs when the fetus has been developing in the womb for 37 weeks or less. Warning signs of premature labor include having contractions every ten minutes or less, feeling a dull backache, and leaking fluid or blood. Doctors can give medication to stop premature labor.

Communication Skills

In the Delivery Room. Ask students if they have ever visited a pregnant woman in the delivery room, before or after a birth. Have students describe their experiences and the emotions involved. Tell students that some couples would rather go through the birth experience by themselves and announce the baby’s birth later at a separate location. Ask students to speculate why couples might do this and how they can communicate their wishes to other people.
False Labor

Some women feel what is called “false labor” hours or even days before their actual labor starts. They begin to feel strong contractions and believe that labor may have begun. Doctors look for three signs that indicate false labor:

- Contractions aren’t regular or rhythmic.
- Contractions don’t become stronger over time.
- Contractions end with light exercise, such as walking.

When contractions follow a regular pattern and grow in intensity, a woman is having real labor. The woman and her labor coach should time the contractions—how long they are lasting and how frequently they are occurring.

It can be difficult to determine the right time to go to the hospital or birthing center. The doctor or the nurses at the obstetrician’s office or medical center can provide guidance. See Fig. 6-2.

Inducing Labor

If necessary, labor can be started by artificial means, such as by using medication or puncturing the amniotic sac. Often, labor is induced for medical reasons or in emergencies. If the baby has been slow to develop or is still in the womb after 42 weeks, the physician may decide to induce labor. This is also the case if the amniotic sac has broken and labor doesn’t begin on its own. Having labor induced doesn’t significantly change the process. The labor probably won’t be longer, more painful, or more difficult than natural labor.

Discussion. When contractions begin is not a good time for a pregnant woman to decide what she needs to bring with her to the hospital. Discuss with students what items an expectant mother should bring for herself and the new baby.

Helpful Poems. Sometimes using rhyme can help people remember information. Have students imagine they are working on a campaign to help educate pregnant women about the signs of false labor and how they can distinguish between false labor and the real thing. Have students write a short poem about it. As an extension idea, encourage students to set their poems to a favorite melody. Ask students to present their poems to the class.

Problem-Solving Skills

Braxton Hicks Contractions. Braxton Hicks contractions have been nicknamed practice contractions because they do not signal labor but instead mimic the contractions a woman might feel prior to delivery. They can occur in the second trimester, but usually are felt during the third trimester. Some factors that seem to be related to these contractions are activity and dehydration. If the contractions go away after the woman moves around a bit, then they are probably false. Ask students why it is important that pregnant women know the signs of Braxton Hicks contractions.
Before Labor Begins
Before labor begins, the cervix is its normal size and shape.

First Stage of Labor
Contractions make the cervix dilate, or widen. The cervix also becomes thinner, changing from its usual thickness of about ¾ inch (19 mm) to become as thin as a sheet of paper. This thinning is called “effacement.”

Transition
Transition completes the work of the first stage. The cervix becomes fully dilated to a size of 4 inches (10 cm) and the baby’s head slips out of the uterus into the birth canal.

1. What is the thinning of the cervix during the first stage of labor called? (Effacement)
2. What is the name for when the top of the baby’s head first appears at the opening of the birth canal? (Crowning)
3. What is expelled during the third stage of labor? (The placenta)

**Critical Thinking**

Analyzing Changes. What changes in the pregnant woman’s body allow childbirth to occur? What causes these changes? How does the baby’s body change to allow for childbirth?

Fetal Monitoring. Technological advances allow health care professionals to keep an eye on a fetus’s heartbeat.
- Fetoscopes are stethoscopes used by a medical professional to monitor the fetal heart rate for short periods of time.
- Internal Fetal Monitoring places an electrode on the head of the fetus. The mother’s water must be broken before Internal Fetal Monitoring can be used.
- Telemetry Monitoring uses radio waves to monitor the heartbeat. The mother wears a transmitter that sends the baby’s heartbeat to a nurse’s monitoring device.
Doulas. Doulas are people who are trained to help in preparing and supporting a woman through the childbirth process. Doulas give information to expectant mothers and answer any questions they might have beforehand. They also guide a woman through relaxation exercises during labor. Doulas do not take the place of the father or the woman’s birthing coach, but they are there to keep the pregnant woman calm and to help her have the most positive childbirth experience possible. Doulas, in contrast to midwives, are not required to have medical training. They do not play a clinical role in the childbirth process.

Guest Speaker. Invite a nurse practitioner or prenatal/infant specialist to visit the class. Suggest that the visitor bring films shown to expectant parents about delivery and high-risk infant care. Ask the visitor to include information about any recent medical breakthrough that affects the baby’s arrival.

Circumference. Review compass basics (purpose of a compass and how to use one). Provide each student with a compass. Have students set the compass to half of the appropriate width of the woman’s cervix at full dilation, and draw the circumference of the circle on a piece of paper. Have students discuss how the cervix is able to dilate to that size. You can extend the activity by having students find the diameter and radius of the circle.

Assisted Delivery. A pregnant woman might need help while delivering. In these cases, a doctor might use forceps or suction to help the baby out of the birth canal. What questions do you think a pregnant woman should ask beforehand about assisted delivery? What concerns might she have?
Stages of Labor

Labor moves through three stages:

- **Stage 1**: Contractions open the cervix.
- **Stage 2**: The baby is born.
- **Stage 3**: The placenta is expelled.

Figure 6-3 on pages 182–183 provides more information about these stages.

The amount of time it takes to give birth depends on the mother and baby. It often takes longer if the baby is the woman’s first. For a first birth, the initial stage may last from 6 to 18 hours. It may be 2 to 5 hours for a later child. The second stage is typically 1 to 2 hours for a first child, but might last 15 to 30 minutes for a later child. The third stage, the shortest, can take anywhere from 10 to 30 minutes.

**The First Stage**

In the first stage of labor, contractions in the uterine muscle pull up on the cervix, slowly softening and thinning it and allowing it to open. Contractions increase in strength, length (lasting about 60 seconds), and frequency (5 to 6 minutes apart). The woman begins to turn inward, searching for the strength to deal with the demands of labor. She becomes more focused and needs support from her coach. See Fig. 6-4.

As the cervix opens, or dilates, the baby moves into the lower pelvis. Most babies enter the world headfirst, but some enter the pelvis with their feet or buttocks first, a position known as **breech presentation**. Babies in these positions may have a difficult time moving through the pelvis. The doctor will decide whether a normal delivery is possible.

The first stage concludes with a period called transition when the cervix becomes fully dilated to a diameter of about 10 cm; it occurs at the conclusion of the first stage.

**The Second Stage**

Contractions during the second stage are more productive, pushing the baby through the pelvis and out of the vagina, or birth canal. During this period, it is safe for a woman to push—to use her muscles to expel the baby. Earlier pushing might have resulted in tearing of delicate tissues, or other types of injuries.

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1. During the first stage of labor, what causes softening and thinning of the **cervix**? (Contractions in the uterine muscle)
2. What is a breech presentation? (When babies enter the pelvis with their feet or buttocks first)
3. What is transition? (The cervix becomes fully dilated to a diameter of about 10 cm; it occurs at the conclusion of the first stage)
4. What can mothers and fathers learn in childbirth classes? (Breathing and relaxation techniques that may distract the woman from pain)
5. What is an epidural block? (Anesthesia that is injected into the lower back, numbing the lower half of the body)

**Critical Thinking**

Making Comparisons. How might a first-time expectant mother differ from a pregnant woman who has given birth previously? What do you think a mother learns the first time she gives birth that helps her the second time? How might these women face labor and delivery differently?

**Test Your Hypothesis.** Review the term **hypothesis** (an if..., then... statement that is used to test an idea in science). Have students draft a hypothesis about the relationship between the number of children a woman gives birth to and the amount of time spent in labor. Then allow students to survey a number of women who have given birth to more than one child. Have students record their findings and graph the data. As a class, discuss the results of the survey and determine whether or not the students’ hypotheses were correct.
Most first-time mothers worry about how much pain is involved in the birth process. The truth is, it varies. Some women find it very painful and tiring, while others don’t. There are many ways to cope with the pain, including medication. About 20 percent of North American women give birth without drugs. There are different options available to help expectant parents cope with labor.

- **Childbirth classes.** Mothers and fathers can learn breathing and relaxation techniques and focusing exercises that may help distract a woman from pain. Some classes teach a form of self-hypnosis that can significantly reduce pain.

- **Pain relief.** There are several types of anesthesia used for childbirth. Some are injected into veins or muscles, where they act on the entire body. These don’t slow labor but may make women and their babies sleepy. Others, called **epidural** (eh-pi-DUR-al) blocks, are injected into the lower back, where they numb the lower half of the body. Epidural blocks still allow women to feel some pressure as the baby’s head descends. Sometimes, if the pain is worse than expected, or there are other problems, more medication may be necessary.

**YOUR TURN**

1. Women may think they failed because they prepared for weeks or months to have a natural childbirth, but they ended up letting themselves and their babies down. They may also think it is weak to use drugs or medication.

2. You could tell them no one believes they have failed for not wanting to be in extreme pain. Also, that concentrating on the pain might have taken them away from the positive experience of having a baby.

**Pain Relief.** Pain relief options for pregnant women include epidural anesthesia, general anesthesia, local anesthesia, narcotics, pudendal block, and spinal block. Divide students into groups. Assign each group a pain relief option to research. Students should document how the medicine works and what possible side effects it may have on the mother and/or the baby.

**YOUR TURN**

- **Reassurance.** Some women who are sure they want to give birth without medication for pain end up using it anyway. Why might they think they “failed”? How could you reassure them that they did not?

**Writing Activity**

**No Pain, No Gain.** Childbirth may be painful, but it is extremely rewarding. Have students write a short story about a time in their lives in which they may have had to endure pain but the outcome was more than worth it. Provide students with the following examples: swimming extra laps at practice in preparation for a big meet; helping a loved one recover from an injury. Students should use metaphors and similes to make their writing as vivid as possible.
How can a baby fit through such a narrow space? Ligaments, or connective tissue, join the bones of the mother’s pelvis. During labor, a hormone called relaxin allows this tissue to stretch like rubber bands, moving apart the pelvic bones. Relaxin also makes it possible for the walls of the vagina to stretch so that the baby can safely pass through.

A baby’s body is designed for this journey, with a soft skull that enables the baby’s head to become longer and narrower than usual. The skull consists of five separate bones that move together and allow for the baby’s head to fit through the pelvis and vagina.

Sometimes the opening in the mother’s body is too small to accommodate the baby’s passage. In this case, the doctor may widen it with a surgical cut called an episiotomy.

As the baby’s head emerges, the doctor or midwife provides gentle support. The head is followed by one shoulder, and then the other. The rest of the baby follows quickly.

Sometimes doctors use surgical tongs called forceps to grasp the baby’s body and guide its movement. A vacuum extractor that applies suction to the baby’s head once it appears may be used if the baby needs to be moved through the birth canal quickly.

The Third Stage

After birth, the mother may be able to rest briefly, and then may feel a few contractions and a desire to push. These contractions usually are not painful. They help the placenta, the organ that develops in the mother and helps supply oxygen to the fetus, separate from the uterine wall. When the mother pushes the placenta out of her body, the birth process is complete. The final stage of labor is brief but important. See Fig. 6-3 on pages 182–183 for more information on the stages of labor.

Scientists have discovered that cord blood, the blood left behind in the umbilical

1. What is the name of the hormone that allows the connective tissue to stretch during the second stage? (Relaxin)
2. What is an episiotomy? (A surgical cut to accommodate the baby’s passage)
3. What are the names of the surgical instruments a doctor may use to assist the baby through the birth canal? (Forceps; vacuum extractor)
4. Why do parents have cord blood stored? (Stem cells within the cord blood may be used to treat serious blood-related illnesses)
5. What is a cesarean birth? (Delivery through a surgical incision in the mother’s abdomen)

Answers to

**PERSONAL APPLICATION**

1. Answers will vary, but may include a mother or older sister whom the student visited in the hospital.
2. Possible answers: from a childbirth education class; from a Lamaze class; from a Bradley method class; from a video; from a pregnancy book

**Communication Skills**

Cord Blood Banking. Parents should talk with one another prior to labor and delivery about whether or not they wish to preserve their child’s umbilical cord blood for potential use should a need arise. The doctor or health care professional can only extract the cord blood during a small window of time—15 minutes after the baby has been delivered. That is why it is important to make this decision beforehand. Ask students to list what possible concerns parents would have about cord blood banking, and where they might find answers to their questions.
What’s in a Name?

What is the best way to choose a name for a baby? Children are often named after relatives, living or deceased. In China, parents’ hopes for a healthy, prosperous life for their children are reflected in the names they choose. Girls’ names typically include words relating to elements of beauty or composure, such as ting (graceful) or hua (flower). Boys’ names are designed to honor ancestors or indicate strength, such as shaozu (bring honor to our ancestors) and gang (steel). Some Chinese names are combinations of elements, such as po yee, meaning “treasured child.”

Investigating Culture

1. Discuss how people use names to link children to past generations.
2. The number of last names in China is small, but there are billions of first names. Why might the number of first names be so large?

Name Origin. Explain that a name can reflect cultural identification, time period, and societal significance. Have students ask parents or relatives about the origin of their first name. Students can try to find out if their name was popular at the time, was the same as a relative’s or a significant person’s in history, or has some other special meaning.

Field Trip. Arrange a field trip to a hospital. In planning the visit, ask a nurse practitioner, or other medical representative, to include visits to an empty typical patient room for labor, to the healthy-baby nursery, and to the high-risk nursery.

Cord and placenta following birth, contains stem cells. These stem cells are capable of producing all types of blood cells. The stem cells can be used to treat many serious blood-related illnesses in the baby or other family members. Parents can arrange to have the cord blood stored for later use in case there is a future medical need. It may also be donated for use by others.

Cesarean Birth

Not all births progress through these stages of labor. If complications arise during pregnancy or labor, a cesarean birth (si-ZARE-eeuhn), also known as a cesarean section or c-section, may become necessary. In this case, the baby is delivered through a surgical incision in the mother’s
Parenting in Action

After a Cesarean. Charlene underwent a C-section because her baby was in breech position. Her obstetrician has advised her to stay in bed, drinking fluids and eating nutritious foods. Yet, Charlene still needs to breast-feed her baby. Have students discuss how Devon (Charlene’s husband) can help Charlene recuperate and look after his new daughter. What challenges will Devon face that might have been different if Charlene had a vaginal delivery?

After a Cesarean Birth. A cesarean birth may be necessary when complications arise during labor. How does a cesarean birth differ from natural birth?

1. What is one type of medication that may be given during a cesarean section? (An epidural)
2. What are some of the advantages of cesarean delivery? (It can relieve stress on the baby, speed up delivery, and allow the doctor to better control the birth process)

Fig. 6-5 A cesarean birth may be necessary when complications arise during labor. How does a cesarean birth differ from natural birth?

Proportions. Discuss the mathematical relationship between a premature baby’s birth date and birth weight. Ask students the following:

- If premature baby Rachel is born in week 32 and premature baby Jason is born in week 34, which baby will weigh more? (Jason)
- If Peter weighs 4 pounds, 7 ounces and Lilly weighs 5 pounds, 3 ounces, who was most likely born earlier? (Peter)

Bleeding in the Brain. Some premature babies born in week 33 or sooner may experience an intraventricular hemorrhage (brain bleeding), causing severe problems later on, such as mental retardation, cerebral palsy, and learning disabilities. If it is predicted early enough that the baby will be premature, the mother can take certain medications to decrease the baby’s chances of hemorrhaging.

Premature Birth

Between 5 and 6 percent of all babies are born prematurely. Premature babies are those born before reaching 37 weeks of development and weighing less than 5 pounds, 8 ounces (2.5 kg). The earlier babies are born, the less developed their organs are and the lower their birth weight.

The Baby’s Arrival
Why are babies born prematurely? No one knows for sure, but mothers who have had other premature births, are carrying more than one baby (as with twins or triplets), or have other medical problems are more likely to have premature babies. Teen mothers are more likely to give birth prematurely. Women can reduce their risks by eating properly and getting proper prenatal care.

Premature babies require special care. They are not really ready to live outside their mother’s body. Their systems for controlling body temperature, breathing, and feeding are not yet mature. These systems are under control of the brain. At this point, a premature baby’s brain is not yet ready to control these systems. To help control them, a premature baby is usually placed in an incubator. In this special enclosed crib, the oxygen supply, temperature, and humidity can be closely controlled. Advances in medical technology allow many premature infants—some weighing as little as 1 pound (454 g)—to survive and grow to be healthy. Others have long-term health problems, learning problems, or even brain damage.

SECTION 6-1 Review and Activities

Reviewing the Section
1. Name two early signs of labor.
2. What is the purpose of fetal monitoring?
3. Why must a baby be delivered within 24 to 48 hours after the mother’s water has broken?
4. How do premature labor and false labor differ?
5. Why is it sometimes necessary to induce labor?
6. What happens during the first stage of labor?
7. Why is the third stage of labor important?
8. What is relaxin, and what does it do?
9. Name three reasons why a baby might be delivered by cesarean birth.
10. What are stem cells?
11. Why do premature babies require special care?

Observing and Interacting
Think about when you have seen babies being born on television or at the movies.
1. How was labor shown to happen?
2. After reading this section, do the labors you have seen in the media seem realistic?

Review Answers
1. Any two: The “show” or “bloody show” of mucus; a trickle or gush of fluid from the vagina; contractions.
2. The purpose is to watch the baby’s heartbeat for any signs of stress.
3. The baby should be delivered within that time in order to protect the baby from infection.
4. In the event of a premature labor, contractions come every 10 minutes, whereas false labor contractions do not have a regular time period.
5. It’s sometimes necessary for medical reasons or emergencies, if the baby has been developing slowly or is still in the womb after 42 weeks, or if the amniotic sac has broken and labor hasn’t begun within 24 to 48 hours.
6. Contraction dilate the cervix to transition as the baby moves into the lower pelvis.
7. The contractions in the third stage help the placenta separate from the uterine wall so the placenta can be expelled.

Review Answers cont’d
8. Relaxin is a hormone that increases the elasticity and stretch of the ligaments connecting the pelvic bones and the vaginal walls.
9. Any three: The baby might be delivered by cesarean birth if labor doesn’t progress as normal, the baby is in distress, the baby is turned in the wrong direction, or there are multiple babies.
10. Stem cells are cells found in the umbilical cord and placenta that are able to produce all types of blood cells.
11. Premature babies have less developed organs and lower birth weight the earlier they are born. They are not really ready to live outside the mother’s body. Their systems for controlling body temperature, breathing, and feeding are immature.