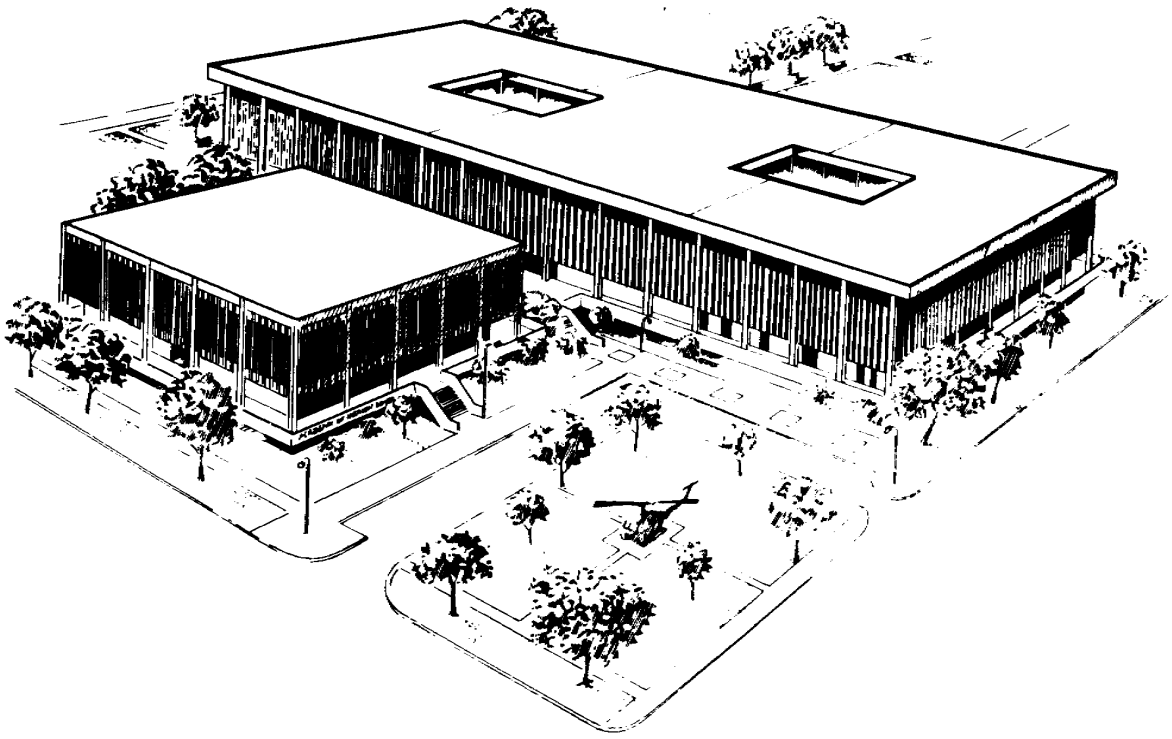
U.S. ARMY MEDICAL DEPARTMENT CENTER AND SCHOOL
FORT SAM HOUSTON, TEXAS 78234-6100



OBSTETRICS/PEDIATRICS

SUBCOURSE MD0584 EDITION 100

DEVELOPMENT

This subcourse is approved for resident and correspondence course instruction. It reflects the current thought of the Academy of Health Sciences and conforms to printed Department of the Army doctrine as closely as currently possible. Development and progress render such doctrine continuously subject to change.

ADMINISTRATION

Students who desire credit hours for this correspondence subcourse must meet eligibility requirements and must enroll in the subcourse. Application for enrollment should be made at the Internet website: http://www.atrrs.army.mil. You can access the course catalog in the upper right corner. Enter School Code 555 for medical correspondence courses. Copy down the course number and title. To apply for enrollment, return to the main ATRRS screen and scroll down the right side for ATRRS Channels. Click on SELF DEVELOPMENT to open the application and then follow the on screen instructions.

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CLARIFICATION OF TERMINOLOGY

When used in this publication, words such as "he," "him," "his," and "men" 'are intended to include both the masculine and feminine genders, unless specifically stated otherwise or when obvious in context.

USE OF PROPRIETARY NAMES

The initial letters of the names of some products may be capitalized in this subcourse. Such names are proprietary names, that is, brand names or trademarks. Proprietary names have been used in this subcourse only to make it a more effective learning aid. The use of any name, proprietary or otherwise, should not be interpreted as endorsement, deprecation, or criticism of a product; nor should such use be considered to interpret the validity of proprietary rights in a name, whether it is registered or not.

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CORRESPONDENCE COURSE OF
THE U.S. ARMY MEDICAL DEPARTMENT CENTER AND SCHOOL

SUBCOURSE MD0584

OBSTETRICS/PEDIATRICS

INTRODUCTION

The birth of a child is usually a wonderful and exciting event. Despite the occasional magazine or newspaper article extolling the virtues of having a child at home with an experienced midwife in attendance, we are still generally conditioned to having the baby in a hospital complete with attending physician. Sometimes, however, the baby decides to be born before the mother can get to the hospital. In such a case, you may be called upon to assist in the birth. Birth is a natural process with the mother doing the delivering and someone else, perhaps you, assisting in the delivery. Also, as much as children are wanted, there are times when some adults lose control and abuse a child. You need to know something about child abuse in case you find yourself examining a child you suspect has been abused.

This subcourse deals with childbirth outside a medical treatment facility, pediatric emergencies, and child abuse. A lesson on the female and male reproductive systems is included to allow you to review these systems. Your attention to learning the material given in this subcourse will prepare you to deal with situations involving childbirth and children.

Subcourse Components:

The subcourse instructional material consists of four lessons as follows:

Lesson 1, The Reproductive Systems.
Lesson 2, Normal and Emergency Childbirth.
Lesson 3, Pediatric Emergencies.
Lesson 4, Child Abuse.

Here are some suggestions that may be helpful to you in completing this subcourse:

--Read and study each lesson carefully.

--Complete the subcourse lesson by lesson. After completing each lesson, work the exercises at the end of the lesson, marking your answers in this booklet.

--After completing each set of lesson exercises, compare your answers with those on the solution sheet that follows the exercises. If you have answered an exercise incorrectly, check the reference cited after the answer on the solution sheet to determine why your response was not the correct one.

Credit Awarded:

Upon successful completion of the examination for this subcourse, you will be awarded 5 credit hours.

To receive credit hours, you must be officially enrolled and complete an examination furnished by the Nonresident Instruction Branch at Fort Sam Houston, Texas.

You can enroll by going to the web site http://atrrs.army.mil and enrolling under "Self Development" (School Code 555).

A listing of correspondence courses and subcourses available through the Nonresident Instruction Section is found in Chapter 4 of DA Pamphlet 350-59, Army Correspondence Course Program Catalog. The DA PAM is available at the following website: http://www.usapa.army.mil/pdffiles/p350-59.pdf.

LESSON ASSIGNMENT

LESSON 1	The Reproductive Systems.
LESSON ASSIGNMENT	Paragraphs 1-1 through 1-15.
LESSON OBJECTIVES	After completing this lesson, you should be able to:

1-1. Identify the various parts of the female and male reproductive systems.

1-2. Identify functions of the female and male reproductive organs.

1-3. Identify the pathway of ova in the female reproductive system.

1-4. Identify the pathway of sperm in the male reproductive system.

1-5. Identify the major events of pregnancy:
- Fertilization.
- Implantation.
- Gestation.
- Parturition.

SUGGESTION After completing the assignment, complete the exercises of this lesson. These exercises will help you to achieve the lesson objectives.

LESSON 1

THE REPRODUCTIVE SYSTEMS

Section I. THE FEMALE REPRODUCTIVE SYSTEM

1-1. INTRODUCTION

a. **Reproduction Defined.** The mechanism by which life is maintained is reproduction. Reproduction can be defined as the process by which a single cell duplicates its genetic material, thus allowing an organism to grow and repair itself. Reproduction, therefore, maintains the life of a member of a species. Additionally, reproduction is the process by which genetic material is passed from generation to generation.

b. **Major Types of Reproduction.** There are two major types of reproduction: asexual and sexual. Only one parent is involved in asexual reproduction. The parent cell may divide and become two new cells, or the new organism may arise from a part of the parent cell. In the case of humans, sexual reproduction takes place. This requires the participation of two parents. Each parent produces special reproductive cells called sex cells or gametes. In this sense, reproduction maintains the continuation of the species. If a species loses its reproductive capability, the species no longer survives. It becomes extinct.

c. **Female Reproductive System Functions.** The female reproductive system has specialized organs to carry out its three important functions. These functions are the production of egg cells, the disintegration of nonfertilized egg cells, and the protection of the developing embryo.

1-2. EXTERNAL GENITALIA

The vulva and its parts make up the external genitalia. The word vulva is a term that has been designated to stand for the external genitalia of the female.

a. **Mons Pubis.** The elevated, fatty tissue covered with coarse pubic hair which lies over the symphysis pubis is the mons pubis. Pubic hair appears at puberty. The function of the mons pubis is to protect the pelvic bone.

b. **Labia Majora.** The labia majora are large, longitudinal folds of skin and fatty tissue which extend back from the mons pubis to the anus. The outer surfaces are covered with hair. The inner surfaces are smooth and moist. The corresponding structure in the male is the scrotum. The function of these folds is to protect the entrance to the vagina.

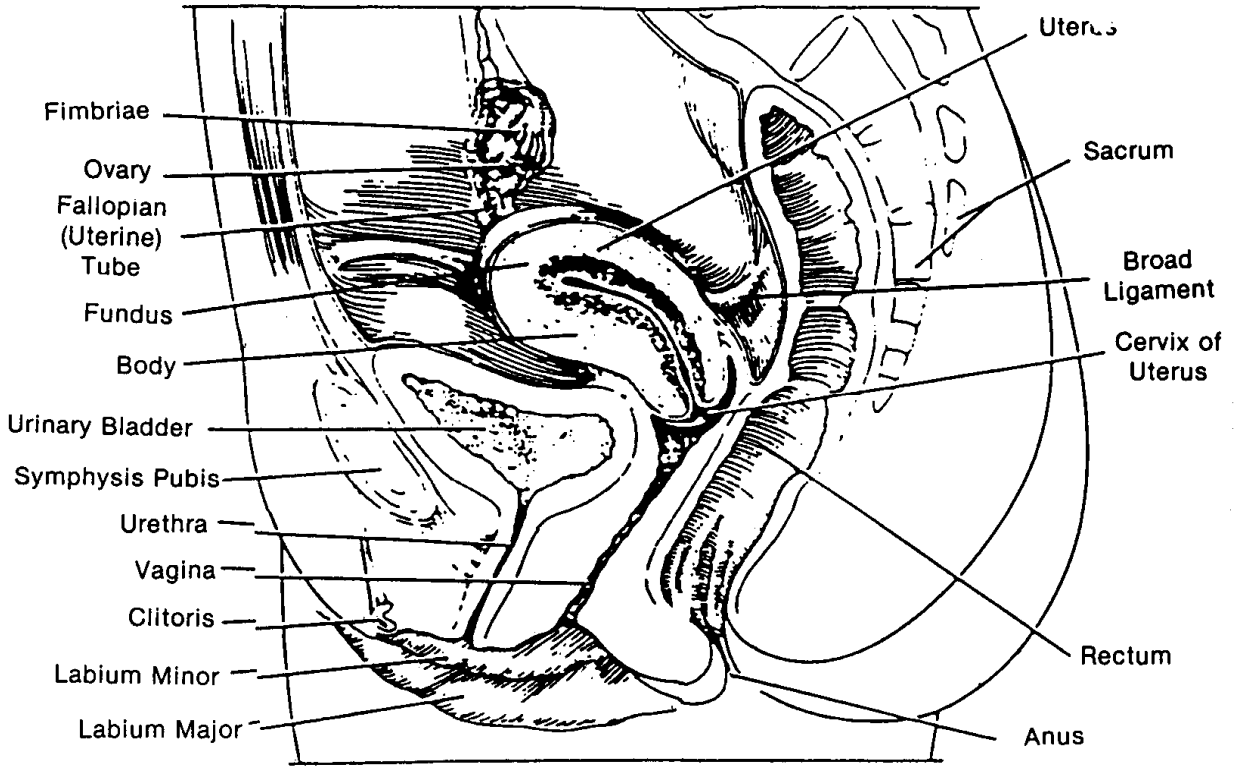


Figure 1-1. Female reproductive system.

c. **Labia Minora.** The labia minora are two folds of skin lying within the labia majora and also enclosing the vestibule. In front, each labium minus (minus = singular of minora) divides into two folds. The fold above the clitoris is called the prepuce of the clitoris. The fold below is the frenulum. No pubic hair is on these structures.

d. **Clitoris.** The clitoris is a small projection of sensitive, erectile tissue which corresponds to the male penis. The female urethra, however, does not pass through the clitoris. As in the male penis, the clitoris is covered by prepuce.

e. **Urinary Meatus.** The urinary meatus is the small opening of the urethra which is located between the clitoris and the vagina.

f. **Vaginal Orifice.** This is the opening to the vagina from the outside.

g. **Bartholin's Glands.** These are bean-shaped glands located on each side of the vaginal orifice. They provide lubrication of the vagina.

h. **Perineum.** The perineum is the area between the vaginal orifice (opening) and the anus.

1-3. INTERNAL GENITALIA

a. Uterus or Womb.

(1) Description/information. The uterus is a hollow, muscular, pear-shaped organ. It is located in the pelvic cavity between the urinary bladder and the rectum. During a woman's child-bearing years, the uterus is about 7.5 centimeters long, 5 centimeters wide, and 2.5 centimeters thick. The uterus has three anatomical divisions: the fundus, the body, and the cervix. The fundus is the upper, convex part of the uterus. This part is just above the entrance to the uterine tubes. The body is the central portion of the uterus, and the cervix is the lower, neck-like part of the uterus.

(2) Walls. The walls of the uterus are made up of three layers: the endometrium, the myometrium, and the parietal peritoneum. The endometrium, the inner layer, attaches itself to the myometrium layer and lines the uterus. This layer is sloughed off during menstruation or post- delivery. The middle layer, which is composed of smooth muscle, is the myometrium. This layer is made up of longitudinal, circular, and spiral muscular fiber which interlaces. The myometrium is thickest in the fundus and thinnest in the cervix. During childbirth, this muscle layer is capable of the very powerful contractions necessary for a normal birth. The third layer, the parietal peritoneum, is the outer layer which is a serous membrane. This outer layer of uterine wall is incomplete, covering only part of the uterine body and none of the uterine cervix.

(3) Functions. The uterus has three major functions which occur during these events: pregnancy, labor, and menstruation. During pregnancy, the uterus holds the fertilized ovum. The ovum is deposited in the uterus where it grows and develops through the embryo and fetal stages. During the birth process, the uterus produces powerful contractions to expel the mature infant. And, finally, during a female's menstrual phase, the inside lining of the uterus detaches and sloughs off, the uterus expelling its fluid contents.

b. Uterine Tubes, Fallopian Tubes, or Oviducts.

(1) Description/information. These tubes are known by all three names listed above. The name commonly used is fallopian tubes. These two tubes extend from the ovaries to the uterus. An ovum discharged from an ovary passes through one of these tubes to the uterus. Each tube is about 10 centimeters long (4 inches). The tube is located between the folds of the broad ligaments of the uterus. The tubes are attached to the uterus at one end but not attached to the ovaries at the other end. At the ovary end, the tubes are open, funnel-shaped, and close to the ovary. The funnel-shaped ends of the tubes are called the infundibulum, and the fringe or finger-like processes at the tube ends are called fimbriae.

(2) Functions. The uterine tubes are ducts for the ovaries although the tubes are not attached to the ovaries. Additionally, the tubes are the site of fertilization. Fertilization normally takes place in the outer one-third of the tube.

c. **Ovaries.**

(1) Description/information. The ovaries are two almond-shaped glands. They are located on either side of the uterus, below and behind the uterine tubes. The ovaries are detached from the uterine tubes and held in position by a series of ligaments. During the second phase (preovulatory phase) of the menstrual cycle, one of the 20 to 25 primary follicles developed during the menstrual phase matures into a Graafian follicle, a follicle ready for ovulation. During the maturation process, this follicle increases its estrogen production. The rupture of the Graafian follicle with the release of the ovum is the beginning of ovulation.

(2) Functions. One function of the ovaries is to produce ova (female reproductive cells capable of developing, after fertilization, into new individuals). Also, the ovaries discharge ova (ovulation) and secrete the female sex hormones progesterone, estrogen, and relaxin. The ovaries in the female correspond to the testes in the male reproductive system.

d. **Vagina.**

(1) Description/information. The vagina is a muscular, tubular organ lined with mucous membrane. This organ is about 10 centimeters (4 inches) long and extends from the hymen to the cervix. The vagina extends upward and backward between the rectum and the bladder and is attached to the uterus.

(2) Structure. The lining of the vagina is made up of smooth muscle which is longitudinally and circularly arranged in many folds called rugae. The folds of the lining permit the organ to expand when necessary. The hymen is the fold of mucous membrane at the orifice (opening) of the vagina.

(3) Functions. The vagina serves as a passageway for menstrual flow, receives seminal fluid from the male, and serves as the lower part of the birth canal.

1-4. MAMMARY GLANDS

a. **Description/Information.** The mammary glands (breasts) are modified sweat glands which are located over the pectoralis major muscle between the second and the sixth ribs. The interior of each mammary gland contains 15 to 20 compartments called lobes. These lobes are connected by fatty tissue called adipose tissue. The size of a female's breasts is determined by the amount of adipose tissue in the breasts. The amount of milk a female produces after childbirth has nothing to do with the size of her breasts. Each lobe contains several smaller compartments called lobules. Lobules are made up of connective tissue containing milk-secreting cells named alveoli.

b. **Functions in Pregnancy.** A female's breasts enlarge after the second months of pregnancy. At the same time, the nipples become darker due to an increase in pigmentation. For the first three days after the infant's birth, the breasts produce a thin, yellowish fluid called colostrum. This fluid is not as nutritious as breast milk but it serves to nourish the infant until the mother's breast milk comes in on the third or fourth day.

1-5. PATHWAY OF AN OVUM

The descriptions and functions of the female reproductive organs have been given. Here is the pathway of an ovum from an ovary to the uterus.

a. On a monthly alternating basis, each ovary produces a mature ovum (egg).

b. Ova are located in spaces in the ovary called follicles.

c. An ovum matures and bursts out of the ovarian follicle into the appropriate fallopian tube.

e. If the ovum is not fertilized, it is discharged from the body in a process called menstruation. The lining of the uterus disintegrates in response to decreased levels of estrogen and progesterone in the blood.

f. If the ovum is fertilized, it becomes implanted in the uterus where the egg goes through a series of cell divisions. Growth and development of the ovum in the uterus through the embryo and fetus phases eventually results in childbirth.

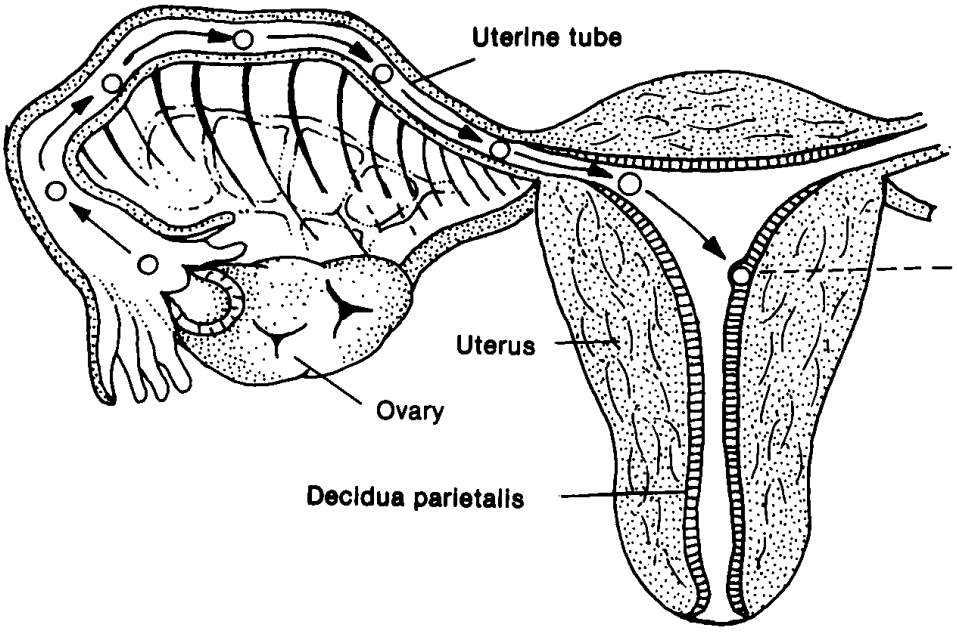


Figure 1-2. Pathway of an ovum.

Section II. THE MALE REPRODUCTIVE SYSTEM

1-6. INTRODUCTION

In the male reproductive system, some organs are located outside the body and others are inside the body. The penis and the scrotum are the external parts of the male reproductive system. Internal male organs involved with reproduction include the testes, epididymis, ductus (vas) deferens, seminal vesicles, ejaculatory ducts, prostrate gland, bulbourethral (Cowper's) glands, and urethra.

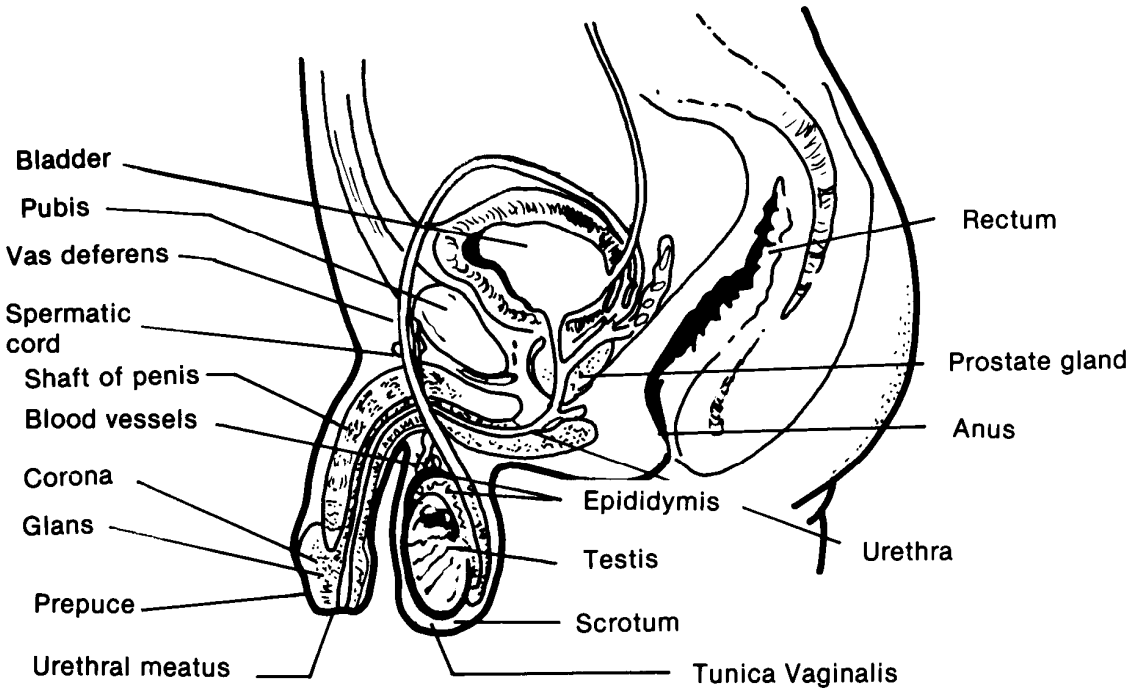


Figure 1-3. Male reproductive system.

1-7. EXTERNAL ORGANS

a. **Penis.** The penis is the male organ of copulation and urination. In the reproduction process, the penis is used to introduce sperm into the vagina.

(1) Glans. The terminal, enlarged end of the penis is called the glans. (The word glands means shaped like an acorn.) This portion of the penis is formed by that part of the spongy body which extends beyond the cavernous bodies of the penis shaft. The glans is highly innervated (tactile).

(2) Shaft. The shaft of the penis is made up of three cylindrical masses of tissue bound together by fibrous tissue. The two back and side tissue masses are called the corpora cavernosa penis. The smaller, third tissue mass is the corpus spongiosum penis, located toward the middle of the shaft and containing spongy urethra.

(3) Erection. These three tissue masses are erectile (capable of erection) and contain blood sinuses (channels). When sexually stimulated, the arteries of the penis dilate. Large quantities of blood enter the blood sinuses. Expansion of these spaces compresses the veins, draining the penis and causing most blood entering to be retained. An erection is caused by these vascular changes, the erection being a parasympathetic reflex. When the arteries constrict and the pressure on the veins is relieved, the penis returns to its flaccid (soft, limp) state.

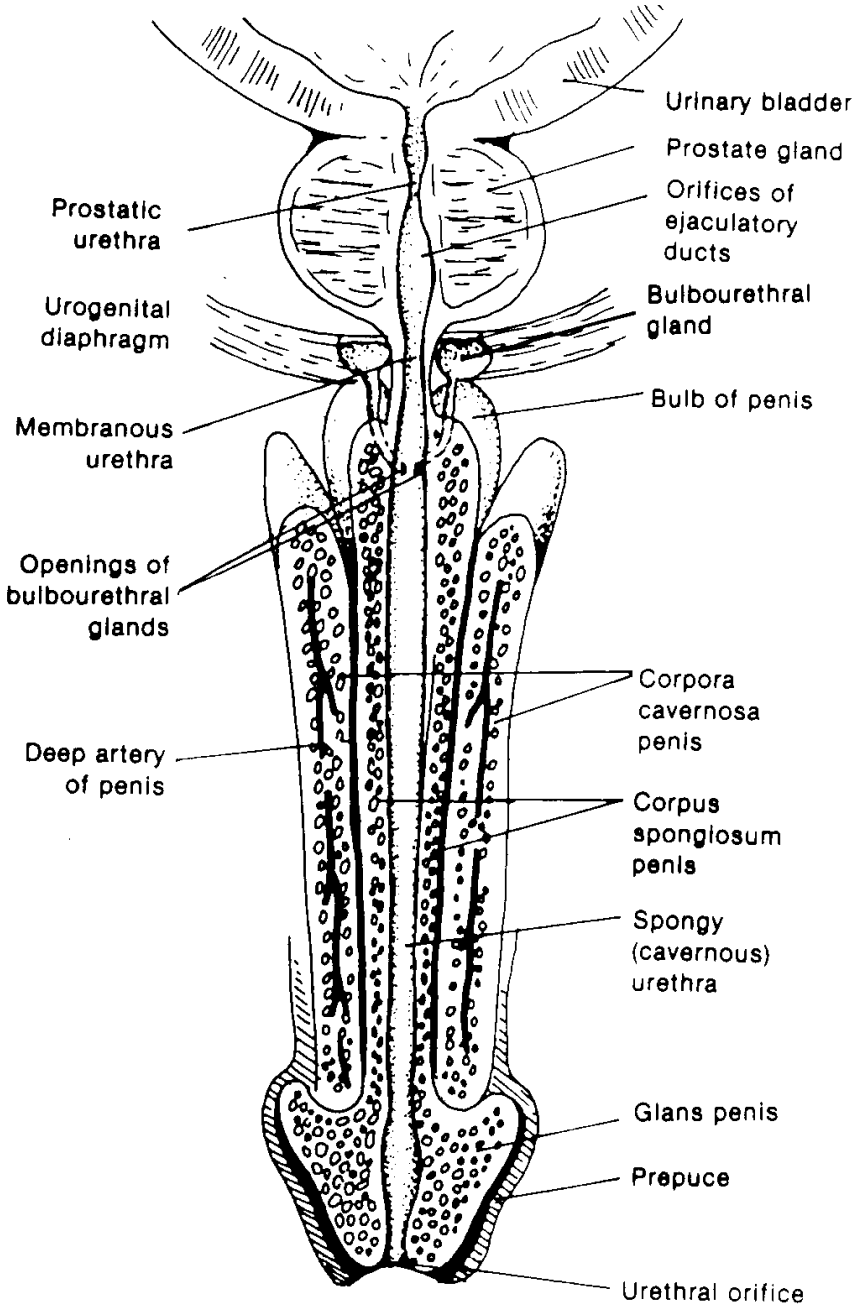


Figure 1-4. Internal structure of the penis.

b. **Scrotum.**

(1) Description/information. The scrotum is a two-layered sac that looks like an outpouching of the abdomen. This sac encloses the testes and the lower part of the spermatic cords. Externally, the scrotum looks as though it is divided into two portions by a ridge (the raphe). Internally, the scrotum is divided into two sacs by a septum, each sac containing a single testis. There are smooth muscles in the walls of the scrotum.

(2) Temperature regulation inside the scrotum. The smooth muscles in the scrotum walls regulate the temperature in the testes where sperm are produced and stored. These smooth muscles contract when it is cold, bringing the testes closer to the warmth of the body. When it is hot, these same muscles relax, moving the testes away from the body to be cooler. For sperm to be produced and survive, the temperature in the testes must be lower than the temperature of the body. Since the scrotum is outside the body, its internal temperature can be kept lower than the internal temperature of the body. The temperature inside the scrotum is about 3^{o}F below body temperature.

1-8. INTERNAL ORGANS

a. **Testes.** The testes are the primary organs of reproduction in the male. The male testes correspond to the female ovaries.

(1) Description/information. The testes are located in the scrotum. They are oval structures enclosed in a fibrous capsule. The testes are covered by a dense layer of white fibrous tissue called the tunica albuginea. This tissue layer extends inward and divides each testis into a series of internal compartments called lobules. Each of the 200 to 300 lobules contains one to three tightly coiled tubules called the seminiferous tubules.

(2) Functions. The seminiferous tubules produce sperm by a process called spermatogenesis. As well as producing sperm, the testes produce the male hormone testosterone. Interstitial cells within the testes produce this hormone, which is essential for the development of the male secondary sex characteristics. If testosterone is not produced in a male body, growth of hair on the face and body, deepening of the voice, and an increase in skeletal mass do not occur. Also, sperm will not develop without testosterone.

(3) Sperm. The seminiferous tubules produce sperm by a process called spermatogenesis. Sperm can be defined as the reproductive cells of the male. Each seminiferous tubule is packed with sperm in various stages of development. Beginning at about puberty, a male produces about 300 million sperm cells each day. As a male grows older, the production of sperm decreases. Males continue to produce sperm throughout life.

(a) Description/information. Compared to a female ovum, a sperm cell is very small, but it is well shaped to reach out and penetrate a female ovum. A sperm cell has a head, a middle section, and a tail. The head is flat and oval shaped (ideal for penetration and attachment) and contains the nucleus of the cell. The middle section is made up of substances that make useable energy to propel the tail. And the long tail acts like a whip to move the sperm. When the head penetrates the ovum, the tail separates from the rest of the sperm.

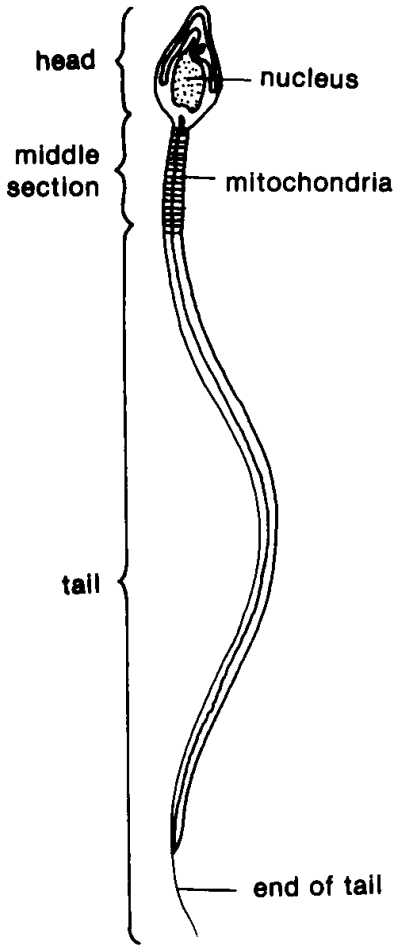


Figure 1-5. Structure of a sperm cell.

(b) Chromosomes in a sperm cell. The nucleus in the head of a sperm cell contains chromosomes. A mature sperm has 23 chromosomes. An immature sperm cell has 46 chromosomes, one an X (female) chromosome and the other a Y (male) chromosome. A reduction division takes place to form a mature cell which has 23 chromosomes. At that time, an X chromosome (female) goes to one sperm cell, and a Y (male) chromosome goes to the other sperm cell. If an ovum is joined by a sperm with an X chromosome, the combination will form a female. If a sperm with a Y chromosome joins an ovum, a male is formed.

b. **Epididymis.** At the upper and posterior part of each testis is the epididymis--an elongated, triangular tube which is 16 to 20 feet in length. Each comma-shaped tube is positioned along the posterior side of a testis and is mostly made up of a tightly coiled tube called the ductus epididymis. Sperm mature in the epididymis tubes. These tubes link the testes proper with the ductus deferens. Sperm are stored in the epididymis tubes until they are ejaculated and enter the vas deferens.

c. **Ductus (Vas) Deferens.** At its tail, the epididymis becomes less coiled, its diameter increases, and the tubes become known as the ductus deferens or the vas deferens. Ductus deferens are muscular tubes which are about 48 centimeters (18 inches) long. Two ductus deferens, one from each epididymis tube, lead up through the inguinal canal into the pelvic cavity, cross to the posterior surface of the urinary bladder, and unite with the ducts of the seminal vesicles to form the ejaculatory ducts. Each ductus deferens stores sperm for a period of up to several months and propels sperm toward the urethra during ejaculation.

d. **Seminal Vesicles.** The seminal vesicles are two glandular pouches located behind and below the urinary bladder. These tubular structures secrete a fluid which activates the spermatozoa in the semen. The secretions contain sugar fructose and prostaglandins. Fructose energizes the sperm, and prostaglandins assist ejaculation and stimulate uterine contractions. Thus, both fructose and prostaglandins help sperm move to the uterine tubes where fertilization occurs. Additionally, this fluid is slightly alkaline, which helps protect sperm against the acid secretion of the vagina. Secretion of the seminal vesicles makes up 60 percent of the ejaculate (fluid ejaculated).

e. **Ejaculatory Duct.** Each ductus deferens and its corresponding seminal vesicle come together to form a short tube called the ejaculatory duct. The ejaculatory duct opens into the urethra within the prostate gland. The ejaculatory duct carries both sperm and seminal vesicle fluid.

f. **Prostate Gland.** This gland is a single, doughnut-shaped gland which is about the size of a chestnut. The gland lies directly below the urinary bladder and surrounds the prostatic part of the urethra. The prostate gland secretes a highly alkaline fluid which protects sperm acidity in the urethra and vagina. Secretion from the prostate gland is added to the sperm and seminal vesicle fluid. From 13 to 33 percent of the volume of semen seminal vesicle fluid is prostate gland secretion. Prostate gland secretion also contributes to sperm motility.

g. **Bulbourethral (Cowper's) Glands.**

(1) Description/information. These are two small glands, about the size of peas, located just below the prostate on either side of the urethra. These glands secrete a mucous-like lubricating fluid into the membranous urethra. The glands also secrete a substance that neutralizes urine. Ducts of these glands open into the spongy urethra.

(2) Semen. Semen (seminal fluid) is the fluid discharged at ejaculation by a male. This fluid is made up of sperm in the secretions of the seminal vesicles, the prostate gland, and the bulbourethral glands.

h. **Urethra.** The urethra is the final duct of the reproductive system. This duct acts as a passageway for sperm or urine. The urethra is about 20 cm (8 inches) long. The ejaculatory ducts pass sperm into the urethra which passes through the prostate gland and through the penis to be ejaculated.

1-9. PATHWAY OF SPERM CELLS

The preceding paragraphs have described the manner in which sperm are produced. Now look at the entire pathway a sperm must travel to fertilize an ovum.

a. With each ejaculation, the testes release up to 400 million sperm. The goal is for one sperm cell to meet and fertilize one ovum.

b. When a male ejaculates, sperm are ejected from the pocket of the testes through a series of ducts (the epididymis ducts, the ductus deferens, and the ejaculatory ducts).

c. Seminal fluid, pouring into the ducts from the prostate gland and the bulbourethral glands, flushes the sperm through the urethra and out of the tip of the penis.

d. Before fertilization can take place, the sperm must be deposited in the vaginal vault, pass through the tiny opening of the cervix, swim through the uterus, and reach the fallopian tubes.

(1) Only the strongest sperm cells survive. Most sperm are destroyed immediately by the acidic fluids that cleanse the vagina. Only a few thousand sperm reach the cervix, and fewer still reach the fallopian tubes.

(2) Normally, the cervix is blocked by a hard wall of mucus which prevents bacteria from entering the uterus. For a few days each month (near the time of ovulation), this thick cervical mucus changes into a fluid stream that sperm can penetrate.

(3) Those sperm that pass through the cervix have about 48 hours in which to reach and fertilize an ovum before they (the sperm) die. Sperm cells can travel this distance in a few minutes.

e. The difficulty of this journey helps ensure that only the most healthy sperm cells reach the fertilization point. Sometimes a poor quality sperm and ovum do unite. Most of these fertilized ova stop developing and are lost spontaneously. The woman losing such an ovum does not even realize that she has been pregnant.

NOTE: Erection of the penis and ejaculation of semen are necessary for the placement of sperm in the female reproductive tract. Semen, also called seminal fluid, is a mixture of sperm and secretions from the seminal vesicle, the prostate gland, and the bulbourethral glands.

Section III. EVENTS OF PREGNANCY

1-10. INTRODUCTION

Pregnancy is defined as the period of time between the conception of a child and the birth of that child. The term pregnancy can be broken down into a series of events which include the following: fertilization, implantation, gestation, and parturition. Understanding each of these events can increase your effectiveness in aiding in the delivery of an infant.

1-11. FERTILIZATION

The union of ovum and sperm is called fertilization. Normally, fertilization takes place in the outer one-third of the fallopian tube shortly after ovulation (the discharge of ovum from the mature follicle) and insemination (introduction of the male's seminal fluid into the female's vagina).

a. **Zygote.** To penetrate the ovum, the sperm releases the enzyme hyaluronidase that makes the surface of the ovum more permeable. The sperm enters the ovum. The nuclei of the sperm and the ovum fuse, making the process of fertilization complete. A new cell, called the zygote, has been made. The zygote cell has 46 chromosomes and all the potentials of the new individual: sex, size, hair color, eye color, etc.

b. **Cell Divisions.** The zygote begins mitotic cell divisions within the space of hours after the zygote has formed. As a result of these divisions, this new zygote cell is soon a fluid-filled ball of cells.

1-12. IMPLANTATION

While these cell divisions are taking place, the zygote is traveling along the fallopian tube. The zygote reaches the uterus in about three to four days, implanting itself in the uterine lining. This implantation, the embedding of the fertilized ovum in the lining of the uterus, has taken place about seven days after the ovum was fertilized.

1-13. GESTATION

Gestation (pregnancy) is the period of time between conception and the birth of the child. The normal duration of human pregnancy is about 40 weeks or 10 lunar months (28 days each) or 280 days. The time period is calculated by counting from the date of the beginning of the mother's last menstrual period. Even though the child was not conceived until two weeks after this date, the date of the beginning of the last menstrual period is used to calculate the expected date of delivery. Usually, the exact date of fertilization cannot be determined.

a. **Embryonic Growth.** From the time it has embedded itself in the uterine wall until the end of the eighth week after fertilization, the new, developing organism has a new name--embryo. During this period, the process of organogenesis is taking place. Organogenesis is the differentiation of cells into specific organs and parts.

b. **Fetal Growth.** At the beginning of the ninth week, the growing organism is referred to by another name--fetus. This term is used for the period of growth and development until delivery. At about the twentieth week, the fetal heart sounds can be heard by placing a stethoscope on the mother's abdomen. The mother can also begin to feel the fetus move.

(1) Placenta. The placenta is a disc-like organ which is formed by tissue from the mother and also from the fetus. The placenta brings nourishment to the fetus and carries away fetal excretions. Hormones such as estrogen and progesterone are secreted by the placenta.

(2) Umbilical cord. The fetus and the placenta are connected by the umbilical cord. The cord has two arteries that carry blood to the placenta and one vein which carries blood to the fetus. The exchange of oxygen and other substances between maternal blood and fetal blood takes place in the placenta. The exchange of substances occurs without any actual mixing of maternal blood and fetal blood since each flows in its own capillaries.

(3) Membranes. Two thin, opaque membranes cover the embryo through its development as a fetus. The amnion, which forms on the eighth day after fertilization, is a fluid-filled sac which surrounds the fetus and then embryo protectively. This sac is more commonly known as the bag of waters. The amniotic fluid serves as a shock absorber for the developing fetus. The chorion, the outermost membrane, is first an outer covering for the embryo and then the fetus. Eventually, the amion membrane fuses to the inner layer of the chorion membrane.

1-14. PARTURITION

Parturition, also called childbirth or birth, is the process of bringing forth an infant from the uterus (the womb). This process can be divided into three stages: first stage: dilation; second stage: expulsion; and third stage: placental stage. Your part in the delivery process will be given in detail in Lesson 2 of this subcourse. This brief description of the three stages will allow you to become familiar with the anatomy of pregnancy and delivery.

a. **First Stage: Dilation.**

(1) In this stage, the cervix opens up (dilates) to a diameter of 10 cm (4 inches). This opening is large enough for an infant's head to pass through. At the beginning of this stage, the contractions of the uterus (labor) occur about every 20 to 30 minutes and last for about 40 seconds. Contractions take place about every three minutes until the cervix is fully dilated to 10 cm.

(2) The length of time it takes for a woman's cervix to dilate completely varies greatly. Usually, full dilation takes longer in a woman having her first baby--perhaps 14 hours. At the other extreme, a woman who has had several children may be fully dilated in less than an hour. Even these estimates are not always true. Do not count on a woman having a long period of dilation just because she is having her first child. About the time the cervix becomes fully dilated, the amniotic sac breaks. The contractions of the uterus force the amniotic sac down toward the cervix. The pressure on the sac causes it to burst, spilling its contents out (breaking of the bag of waters).

b. **Second Stage: Expulsion.** The child is actually delivered at the end of this stage. During the expulsion stage, the baby is pushed through the birth canal. If the delivery is normal, the crown of the baby's head emerges first. Then the shoulders emerge, one shoulder at a time. The lower part of the baby slides out quickly after the shoulders emerge. The average time of this stage of childbirth is one hour and 45 minutes.

c. **Third Stage: Placental Stage.** The uterus becomes much smaller when the child is delivered. As the uterus becomes smaller, the placenta (afterbirth) becomes detached in several places from the lining of the uterus. A few minutes after childbirth, uterine contractions force the afterbirth into the vagina from which the placenta is expelled. Expect some bleeding. A normal amount is one to two cups of blood. Sometimes there is a delay in the separation of the placenta from the uterine lining, and there is more than a normal amount of bleeding. When this occurs, the bleeding must be controlled, and the afterbirth may need to be removed artificially.

1-15. REVIEW OF PREGNANCY EVENT TERMS

Remember these terms having to do with the events of pregnancy.

a. **Amnion**--the thin, tough, innermost layer of the membranous sac that surrounds the fetus. This sac, also called the bag of waters, contains amniotic fluid.

b. **Chorion**--the outermost membrane enclosing the fetus.

c. **Embryo**--an organism in the earliest stages of development; in humans, from the time of conception to the end of the second month in the uterus.

d. **Fetus**--the developing offspring in the uterus, from the second month of pregnancy to birth.

e. **Gestation**--the name for pregnancy; the period of time between conception and birth of the child. The normal duration of human pregnancy is about 280 days, 10 lunar months (months of 28 days each), or 9 calendar months.

f. **Hyaluronidase**--an enzyme found in sperm (also in snake and bee venom) that causes the breakdown of hyaluronic acid in the tissue spaces of the ovum, thus enabling sperm to enter the cells and tissues of an ovum.

g. **Organogenesis**--the origin and development of organs.

h. **Ovum (sg), Ova (pl)**--female reproductive cells capable of developing, after fertilization, into new individuals.

i. **Parturition**--the act of giving birth; also called childbirth.

j. **Placenta**--the organ within the pregnant uterus through which the fetus is nourished.

k. **Semen**--a white fluid produced by the male sex organs as a vehicle for sperm. Another name for semen is seminal fluid. This fluid is mostly composed of sperm plus secretions from the seminal vesicles, the prostate gland, and the Bulbourethral glands.

l. **Sperm**--A mature reproductive cell of the male.

m. **Zygote**--the new cell which is formed when a sperm nuclei and an ovum fuse.

Continue with Exercises

EXERCISES, LESSON 1

INSTRUCTIONS. Complete the following exercises by writing the answer in the space provided. After you have completed all the exercises, turn to the solutions at the end of the lesson and check your answers.

1. The _____ and its parts make up the external genitalia.

2. Complete the following sentences which deal with the female external genitalia.

   a. Elevated, fatty tissue covered with coarse pubic hair is over the symphysis pubis. This tissue is called the _____.

   b. The large, longitudinal folds of skin and fatty tissue which extend back from the mons pubis to the anus are termed the _____.

   c. The labia minora is composed of _____

      _____

   d. The small projection of sensitive, erectile tissue which corresponds to the male penis is the _____.

   e. The small opening of the urethra located between the clitoris and the vagina is the _____.

   f. The opening to the vagina from the outside is the _____.

   g. Bartholin's glands are _____

   h. The area between the vaginal orifice and the anus is the _____.

3. List three functions of the uterus.

   a. _____.

   b. _____.

   c. _____.

4. The uterine tubes are also called the _____ and the _____.

5. Three functions of the ovaries are to _____, _____, and _____.

6. To which male gland do the ovaries correspond? _____

7. Progesterone, estrogens, and relaxin are female sex hormones secreted by the _____.

8. List three functions of the vagina.

   a. _____.

   b. _____.

   c. _____.

9. The male organ of copulation and urination is the _____.

10. List the parts of the internal genitalia of the male.

    a. _____ e. _____

    b. _____ f. _____

    c. _____ g. _____

    d. _____ h. _____

11. In males, sperm is produced in the _____ by a process called _____.

12. Sperm mature and are stored in the _____.

13. The tubes at the tail of the epididymis tubes, less coiled and wider, are known as the _____ or the _____ tubes. These tubes store sperm and propel them to the urethra during _____.

14. Fluid secreted by the seminal vesicles contains sugar _____and _____. These substances help sperm move to the _____ where fertilization takes place.

15. The ejaculatory duct is a passageway for both _____ and _____.

16. The _____ gland secretes a highly alkaline fluid which protects sperm in the urethra and vagina.

17. The _____ glands, pea-sized glands located on either side of the urethra, secrete a lubricating substance that helps sperm on its way.

18. The joining of a sperm and an ovum is called _____.

19. The new cell that is formed when an ovum and a sperm join is called a _____.

20. An enzyme called _____ makes the ovum surface more permeable so that a sperm can penetrate the ovum.

21. About seven days after an ovum has been fertilized, it becomes imbedded in the wall of the _____. This event of pregnancy is called _____.

22. _____ is the name for the growing and developing organism from the time of implantation through the end of the eighth week after fertilization.

23. The name for the growing and developing being from the beginning of the ninth week until delivery is _____.

24. The _____ connects the fetus and the placenta.

25. The organ which brings nourishment to the fetus and carries away fetal excretions is the _____.

26. The period of time between conception (the sperm joins an ovum) and the birth of a child is termed _____.

27. _____ is another name for childbirth.

Check Your Answers on Next Page

SOLUTIONS TO EXERCISES, LESSON 2

1. Vulva. (para 1-2)

2. a. Mons pubis. (para 1-2a)
   b. Labia majora. (para 1-2b)
   c. The two folds of skin lying within the labia majora and enclosing the vestibule. (para 1-2c)
   d. Clitoris. (para 1-2d)
   e. Urinary meatus. (para 1-2e)
   f. Vaginal orifice. (para 1-2f)
   g. The bean-shaped glands on each side of the vaginal orifice. (para 1-2g)
   h. Perineum. (para 1-2h)

3. a. Hold the fertilized ovum during pregnancy.
   b. Produce contractions during the birth process.
   c. Expel its fluid contents during menstruation. (para 1-3a(3))

4. The fallopian tubes.
   The oviducts. (para 1-3b)

5. a. Produce ova.
   b. Discharge ova.
   c. Secrete female sex hormones. (para 1-3c(2))

6. The testes. (para 1-3c(2))

7. Ovaries. (para 1-3c(2))

8. a. Passageway for menstrual flow.
   b. Receives seminal fluid from the male.
   c. Serves as the lower part of the birth canal. (para 1-3d(3))

9. Penis. (para 1-7a)

10. a. Testes.
    b. Epididymis.
    c. Ductus (vas) deferens.
    d. Seminal vesicles.
    e. Ejaculatory duct.
    f. Prostate gland.
    g. Bulbourethral glands.
    h. Urethra. (para 1-6)

11. Seminiferous tubules.
    Spermatogenesis. (para 1-8a(2))

12. Epididymis tubes. (para 1-11b)

13. Ductus deferens or vas deferens.
Ejaculation. (para 1-8c)

14. Fructose.
Prostaglandins.
Uterine tubes. (para 1-11d)

15. Sperm.
Seminal vesicle fluid. (para 1-11e)

16. Prostate. (para 1-11f)

17. Bulbourethral. (para 1-11g)

18. Fertilization. (para 1-11)

19. Zygote. (para 1-11a)

20. Hyaluronidase. (para 1-11a)

21. Uterus.
Implantation. (para 1-12)

22. Embryo. (para 1-13a)

23. Fetus. (para 1-13b)

24. Umbilical cord. (para 1-13b(2))

25. Placenta. (para 1-13b(1))

26. Gestation. (para 1-13)

27. Parturition. (para 1-14)

End of Lesson 1

LESSON ASSIGNMENT

LESSON 2 Normal and Emergency Childbirth.

LESSON ASSIGNMENT Paragraphs 2-1 through 2-25.

LESSON OBJECTIVES After completing this lesson, you should be able to:

2-1. Define common terms pertaining to childbirth.

2-2. Identify characteristics of and management of the following:
- Abortion.
- Ectopic pregnancy.
- Third-trimester bleeding.
- Preeclampsia (toxemia).

2-3. Identify management procedures to follow for a pregnant female who has sustained trauma.

2-4. Identify procedures for assisting in a normal childbirth emergency delivery.

2-5. Identify procedures for assisting in an abnormal childbirth emergency delivery.
- Breech presentation.
- Prolapsed umbilical cord.
- Limb presentation.
- Multiple births.
- Premature births.

2-6. Identify the characteristics and management of the following complications of labor and delivery.
- Antepartum hemorrhage.
- Postpartum hemorrhage.

SUGGESTION After completing the assignment, complete the exercises of this lesson. These exercises will help you to achieve the lesson objectives.

LESSON 2

NORMAL AND EMERGENCY CHILDBIRTH

Section I. GENERAL INFORMATION

2-1. INTRODUCTION

Assisting at the delivery of a baby may well be one of the most exciting things you have a chance to do. Notice the word used is "assisting" at the delivery rather than "delivering" a baby. The reason is that the mother does the delivering; birth is a natural, normal process. It is even more a natural, normal process in some less developed countries where you may serve. However, your assistance may make the process more comfortable for the mother and safer for both the mother and baby. There are few rewards greater than hearing a baby's first cry and seeing the smile on a new mother's face.

2-2. DEFINITIONS -- COMMON OBSTETRIC TERMS

a. Abortion -- the termination of pregnancy before the fetus reaches the stage of viability which is usually less than 21 to 22 weeks gestation (or less than 600 gm in weight).

b. Afterbirth -- placenta, membrane, and umbilical cord which are expelled after the infant is delivered.

c. After pains -- pain due to contractions of the uterus after the placenta has been expelled, following childbirth.

d. Amniotic fluid -- approximately one liter of fluid in a sac which surrounds the fetus. This fluid protects and cushions the fetus during its development.

e. Amniotic sac (bag of waters) -- thin bag which totally encloses the fetus during the development in the uterus.

f. Amniotomy -- artificial rupture of the amniotic sac membranes; also, a method of inducing contractions.

g. Analgesic -- medication which lessens the normal perception of pain.

h. Anesthesia -- medication that causes partial or total loss of sensation with or without loss of consciousness.

i. Apgar scoring -- rating system for newborn babies, measuring the baby's general condition on a scale from 1 to 10.

j. Bloody show -- small amount of blood-tinged discharge due to rupture of small capillaries in the cervix.

k. Breech -- birth with baby's buttocks or feet coming first.

l. Catherization -- emptying the bladder by insertion of a small pliable tube through the urethra.

m. C-section (cesarean section) -- delivery of the baby and the placenta through an incision made into the abdominal wall of the uterus.

n. Cephalic delivery -- in normal circumstances, presentation of the head first.

o. Cervix -- neck of the uterus; "mouth of the womb" which dilates and effaces during labor (dilates to 10 centimeters to accommodate the head of the baby passing through the cervix during the birth process).

p. Colostrum -- thin, yellowish fluid preceding breast milk; usually present by the second day after the birth of the baby. Sugar content of this fluid is the same as breast milk. Colostrum contains as much or more protein material and salts as breast milk but less fat. Colostrum carries protective antibodies.

q. Contractions -- also called labor, the term contractions refers to the muscles of the uterus contracting rhythmically and forcefully just before birth. Terms associated with contractions are as follows:

(1) Intensity -- strength of the muscle contractions.

(2) Duration -- length of time from start to end of the contraction.

(3) Frequency -- time from the beginning of one contraction to the beginning of the next contraction.

(4) Braxton Hicks contractions -- also called false labor, this refers to irregular uterine contractions occurring after the 28th week of pregnancy; felt mainly in the abdomen; changes in the woman's activity will usually cause these contractions to go away.

r. Crowning -- appearance of the baby's head at the vaginal opening.

s. Dilation (or dilatation) -- opening of the cervix. The cervix opens from 1 to 10 centimeters during the birth process.

t. Effacement -- shortening and thinning of the cervix. During childbirth, the cervix becomes a part of the body of the uterus. Measurements are from 0 to 100 percent.

u. Episiotomy -- incision through perineum, enlarging the vaginal outlet.

v. Engagement -- refers to the entrance of the presenting part into the pelvis.

w. Fetus -- developing baby; the developing offspring in the uterus from the second month of pregnancy to birth.

x. Multigravida -- a woman who has been pregnant two or more times.

y. Perineum -- area between the vaginal opening and the anus.

z. Placenta -- also called afterbirth, a special organ of pregnancy which nourishes the fetus. It is expelled following the birth of the baby.

aa. Placenta abruptio -- premature separation of the placenta from the uterine wall, this separation resulting in bleeding from the separation site.

bb. Placenta previa -- placenta that is implanted in the lower uterine segment, possibly totally or partially covering the opening of the cervix.

cc. Prenatal -- refers to the period of time prior to the birth of the baby.

dd. Presenting part -- also called presentation, this is the part of the baby that will deliver first.

ee. Primigravida -- a woman having her first pregnancy.

ff. Primipara -- a woman who has produced one infant of 500 grams or 20 weeks gestation, regardless of whether the infant delivered dead or alive.

gg. Prolapsed cord -- the umbilical cord appears in the vaginal orifice before the head of the infant.

hh. Puerperium -- the time period following the delivery until about six weeks.

ii. Quickening -- feeling of life within the uterus. This is usually noticed during the 16th to the 19th week of gestation.

jj. ROM -- rupture of membranes.

kk. Station -- the location of the presenting part in relation to the level of the ischial spines (midpelvis). Measures from -5 to +5.

ll. Umbilical cord -- cord connecting the baby and the placenta; cord contains blood vessels, usually 19 blood vessels.

mm. Uterus -- also called womb, a pear-shaped muscular organ which holds and nourishes the developing fetus.

nn. Vagina -- also called birth canal, a muscular tube that connects the uterus to the external genitalia; the passage for normal delivery of the fetus.

2-3. SIGNS/SYMPTOMS OF LABOR

a. **Contractions.** Rhythmic, involuntary contractions of the uterus accomplish the process of birth which is called parturition. These involuntary contractions (also called labor pains) become more intense, last longer, and occur closer together in time until they finally cause the cervix to dilate (to open) to a diameter of 10 cm (4 inches). As the uterine contractions become stronger, longer, and closer together, abdominal muscles contract, causing the woman to feel like bearing down or pushing. Contractions of two sets of muscles (uterine and abdominal) expel the fetus and the placenta. The woman often feels uterine contractions as high or low back pain.

b. **Progress of Contractions.** As labor progresses, you can feel the contractions by placing your hand on the mother's abdomen, just above the umbilicus (the navel). An early sign of labor is the discharge of a blood-containing mucus called the bloody show. This mucus has accumulated in the cervical canal during pregnancy. Another early sign is the rupture of the amniotic sac, allowing clear fluid to trickle or gush from the woman's vagina.

c. **True Labor.** The mother is in true labor if:

(1) Uterine contractions are occurring at regular intervals.

(2) Contractions of the uterus are painful and hard.

(3) Pain is felt in both the front and back of the abdomen.

(4) Dilation and effacement of the cervix is accomplished.

(5) The fetal head is starting to descend.

(6) The fetal head is fixed between contractions.

(7) Bulging or rupture of the membranes of the cervix occurs. (This sign may or may not occur in true labor.)

2-4. THREE STAGES OF LABOR

The period of labor can be divided into three stages. The first stage is dilation, the second stage is expulsion, and the third stage is placental stage.

a. **First Stage: Dilation.** During this stage, the cervix dilates at a rate of one to two centimeters per hour until dilation is complete at 10 centimeters (four inches). Effacement (shortening of the cervix) takes place in this stage. The uterus contracts regularly, and the amniotic sac ruptures. If the sac does not rupture by itself, it is ruptured artificially.

b. **Second Stage: Expulsion.**

(1) This stage is the period of time from complete dilation of the cervix through the delivery of the baby. During this stage, contractions take place every two to three minutes. The contractions last about 60 seconds and are more intense than in the first stage. The mother bears down involuntarily. She may bear down when she has the urge. There is increased pressure on the mother's rectum which causes her to feel as though she has to have a bowel movement.

NOTE: Bearing down during the first stage of labor is of no help and will tire the mother. Also, bearing down at that stage may cause fetal distress.

(2) If you find a woman in the second stage of labor, observe her condition and ask her these questions:

(a) Is this her first baby?

(b) How long has she been in labor?

(c) What are her contractions like? (Frequency? Duration? Intensity?)

(d) Is the bearing down involuntary?

(e) Does she feel as if she has to have a bowel movement?

(f) Can you observe the baby's head crowning?

CAUTION: If you observe the baby's head crowning, DO NOT touch the vagina. Touching the vagina could cause infection.

(3) If the woman's answers and your observations indicate that she is in the second stage of labor, prepare to assist in delivery. There is not enough time to get her to a hospital.

(4) The second stage of labor ends with the delivery of the baby.

c. **Third Stage: Placental Stage.** This stage of labor covers the time period after delivery of the baby when the placenta (the afterbirth) is expelled. In this stage, the uterus contracts, causing the placenta to be expelled. This process can take from 1 to 30 minutes. DO NOT pull the placenta out. It will deliver by itself. If you have assisted in a delivery outside a hospital, transport the placenta to the hospital with the mother and child. There the placenta should be examined along with the mother and child. The contractions of the uterus (in expelling the placenta) help constrict blood vessels torn in delivery, thus reducing the possibility of the mother hemorrhaging.

Section II. COMPLICATIONS OF PREGNANCY

2-5. ABORTION

The termination of a pregnancy before the fetus is capable of living, thriving, and growing (viable) is the definition of abortion. Loss of the fetus up to the 24th week of gestation is medically termed abortion, more commonly called miscarriage. Delivery of the fetus after the 24th week but before the full-term of the pregnancy is called premature birth. An abortion can occur spontaneously or be induced. Look at these types of spontaneous abortion.

a. **Threatened Abortion.**

(1) Signs and symptoms. Included are the following:

(a) Slight bleeding during pregnancy.

(b) Pain resembling menstrual cramps.

(c) Sometimes softening and dilation of the cervix.

(2) Treatment. The primary treatment is bed rest. If the patient continues to experience these signs and symptoms, the pregnancy may progress to complete abortion.

b. **Inevitable Abortion.** An inevitable abortion is a spontaneous abortion that cannot be prevented. The most common cause is an abnormally developed embryo or fetus. Other causes are physical trauma or emotional shock to the pregnant female.

(1) Signs and symptoms. Included are the following:

(a) Vaginal bleeding.

(b) Sometimes massive uterine contractions and cervical dilation.

(2) Treatment. Treat as follows:

(a) Start an IV with normal saline or Ringer's lactate solution.

(b) Give fluids as rapidly as necessary to maintain the patient's blood pressure while she is being transported to a medical treatment facility.

c. **Incomplete Abortion.** In this case, some of the products of pregnancy are expelled while other parts are retained.

(1) Signs and symptoms. Included are the following:

(a) Hemorrhage (bleeding, especially profuse).

(b) Persisting cervical dilation.

(2) Treatment. Treat as follows:

(a) Treat for shock, if necessary.

(b) Transport the patient to a medical treatment facility. A physician will remove any partially protruding products of a pregnancy.

2-6. ECTOPIC PREGNANCY

In an ectopic pregnancy, the fertilized ovum is implanted outside the uterus. The fertilized ovum may be in the fallopian tubes, the ovary, or the abdomen. Since none of these structures is able to support the growing ovum, the structure in which the ovum is growing ruptures. About 90 percent of all ectopic pregnancies occur in a fallopian tube.

a. **Signs and Symptoms.** Included are the following:

(1) Severe, sudden onset of lower abdominal pain.

(2) Hemorrhage -- abnormal vaginal bleeding with symptoms of pregnancy.

(3) Over the uterus, a tender palpable mass can be felt.

b. **Treatment.** This is an emergency situation. Transport the patient to a medical treatment facility immediately.

2-7. THIRD-TRIMESTER BLEEDING

a. **Signs and Symptoms.** Bleeding in the last three months of pregnancy must be considered to be placenta abruptio or placenta previa until proven otherwise. Both of these conditions may be rapidly life-threatening because of massive hemorrhaging.

(1) Placenta abruptio -- premature separation of the placenta from the uterine wall resulting in bleeding from the separation site.

(2) Placenta previa -- placenta that is implanted in the lower uterine segment, possibly totally or partially covering the opening of the cervix.

b. **Treatment.** The goal of treatment is to prevent shock. Treat as follows:

(1) Administer 100 percent oxygen.

(2) Establish an IV and run crystalloid or colloid as rapidly as necessary to maintain the patient's blood pressure.

(3) Transport the patient rapidly to the hospital in the lateral recumbent position (also called the obstetrical position, the patient lies on her left side with her right thigh and knee drawn up).

CAUTION: NEVER do a vaginal examination on any woman with third-trimester bleeding.

2-8. PREECLAMPSIA

Preeclampsia is the first stage of a pregnancy condition commonly called toxemia. The earliest signs of toxemia (preeclampsia) must be detected to prevent the condition from progressing to full eclampsia which involves convulsions and coma and can result in death.

a. **Signs and Symptoms.** Problems indicating preeclampsia may develop over the period of a few days or appear suddenly in a 24-hour period. Included are the following:

(1) High blood pressure. The patient's circulation changes, affecting the blood flow to the kidneys. The kidneys start losing track of how much sodium they are supposed to excrete to maintain the body's salt balance. At this time, the kidneys begin to control the patient's blood pressure, causing the blood pressure to rise.

(2) Edema, usually of the face, hands, and/or feet.

(3) Headaches.

(4) Blurred vision.

(5) Abdominal pain.

b. **Treatment.** If treated early, it is possible to prevent preeclampsia from progressing rapidly to full-blown eclampsia and intractable seizures before, during, and after delivery.

(1) Record a blood pressure and the presence or absence of edema in every pregnant woman you examine. Do this regardless of what the patient's chief complaint is.

(2) Be suspicious of any blood pressure above 130/80.

(3) Give supportive care and direct the patient to an obstetrician.

2-9. TRAUMA DURING PREGNANCY

Remember that trauma to a pregnant female involves not only the woman but her baby. There are two patients. Follow this procedure:

a. **Initial Procedure.**

(1) Ensure that the patient's airway is adequate.

(2) Assist in breathing, as needed. Administer 100 percent oxygen, if needed.

(3) Control bleeding promptly.

(4) Treat life-threatening injuries.

(5) If possible, transport the patient in a lateral recumbent position (patient on the left side with the right thigh and knee drawn up) rather than a supine position (patient lying on her back).

b. **General Information.**

(1) Transport to hospital. Potential damage to the fetus cannot be adequately assessed in the field. Even if the mother has sustained only minor injuries, there may have been major trauma to the baby. This is especially true in accidents involving significant deceleration forces. Every pregnant woman who has been in an accident must, therefore, be evaluated in the hospital even if her injuries are trivial.

(2) Two patients. If the woman has been critically or hopelessly injured, remember that there are two patients. It may not be possible to save both lives. At times, the baby can be saved even when the mother cannot. For this reason, you must give an all out effort toward resuscitation of the mother even if saving her life seems hopeless.

Section III. MANAGEMENT OF MOTHER AND NEWBORN DURING NORMAL DELIVERY IN AN EMERGENCY SETTING

2-10. TIME TO TRANSPORT THE MOTHER TO A HOSPITAL

To determine whether there is enough time to transport a woman having a normal delivery to the hospital, find out the following information:

a. Has the patient had a baby before? Labor during a first pregnancy will usually be slower than in subsequent pregnancies.

b. How frequent are the patient's contractions? If the contractions are more than five minutes apart, there is generally enough time to get to a hospital. If the contractions are less than two minutes apart, the baby will probably be born soon, especially if this is not the first pregnancy.

c. Has the patient's amniotic sac ruptured? If so, when did it rupture? If the rupture occurred many hours ago, delivery may be more difficult. Also, the risk of fetal infection is increased.

d. Does the patient feel an urge to move her bowels? This sensation during labor is caused by the baby's head in the mother's vagina pushing against the female's rectum. This sensation is another sign that delivery is about to take place.

e. Is the part of the baby to deliver first crowning? Examine the mother externally for crowning (whether the presenting part of the baby is bulging out of the vagina). If crowning is taking place, the baby is about to be born, and there is no time to get to the hospital.

2-11. TIME TO REACH THE HOSPITAL

If there is time to reach the hospital, place the mother in a lateral recumbent position. Remove any underclothing that might obstruct delivery. DO NOT allow the mother to go to the toilet. NEVER, attempt to delay or restrain delivery in any fashion.

2-12. IMMINENT DELIVERY

If all the signs are that the baby is about to be born and there is no time to get the mother to the hospital, proceed in this manner:

a. **Preparation for Delivery.** Prepare as follows:

(1) Try to find an area of maximum privacy and cleanliness.

(2) Allow another woman or the patient's husband to be present to reassure the patient.

(3) Be calm and reassuring.

(4) Position the patient on her back and place a folded sheet or drape under her buttocks.

(5) Immediately, start an IV with a liter of saline at a keep-open (TKO) rate.

(6) An assistant should move to the patient's head and be prepared to turn her head to one side in case she vomits.

(7) Make an oxygen tank and suction available.

(8) Wash your hands thoroughly before you open the obstetrical kit.

ATTENTION

If no obstetrical kit is available, make an improvised kit by gathering the following:

Plastic bag or other waterproof material.
Clean sheets or towels (to use as drapes).
Pan or container (to collect the placenta).
Rubber bulb syringe (to suction the newborn and clear its airway).
Baby blankets (to wrap the baby in).
Material to tie or clamp the cord.
Sanitary napkins.
Scissors.
Gloves (if available).

(9) Put on sterile gloves. Drape the patient with four towels so that everything but the vaginal opening is thoroughly covered.

(10) Encourage the mother to relax and take slow, deep breaths through her mouth.

(11) Reassure the mother and explain to her what you are doing as you go along.

b. **Delivering the Baby.** Follow this procedure (figure 2-1):

(1) When the baby's head begins to emerge from the vagina, place your right hand (or left hand if you are left-handed) over the emerging head and exert very gentle pressure. This will allow the head to come out smoothly. Place your other hand under the baby's head. Supporting the baby's head is essential. This support will prevent a strong, unexpected uterine contraction from suddenly expelling the baby from the vagina.

CAUTION: DO NOT attempt to pull the baby from the vagina.

(2) If the membranes cover the infant's head after the head emerges, tear the sac (the membranes) with your fingers or forceps to permit the amniotic fluid to escape and enable the baby to breathe.

(3) Make sure the umbilical cord is not wrapped around the baby's neck. If the cord is around the baby's neck, gently try to slip the cord over the baby's shoulder and head.

(4) Deliver the baby's shoulders and body, supporting the head at all times.

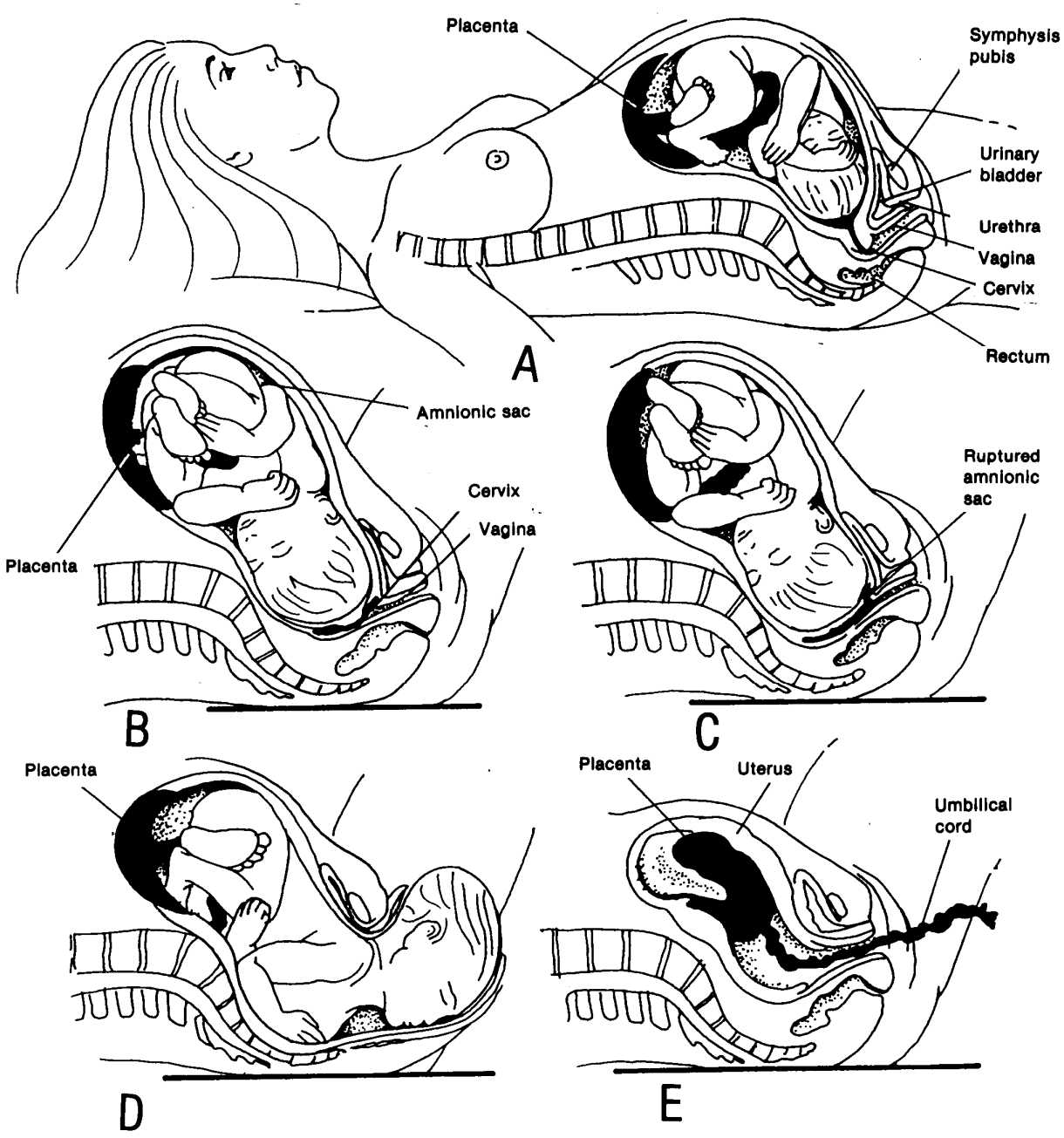
(5) Avoid touching the mother's anus during delivery.

(6) Record the time of birth.

2-13. CARE OF THE BABY

When the baby is fully delivered, lay it along your arm. Grasp the baby like a football with one of the baby's arms and one of its shoulders between your fingers. Hold the baby carefully and remember that babies are very slippery. Follow this procedure:

a. **Cleaning the Baby's Nose and Mouth.** Using sterile gauze, wipe away any blood and mucus from the baby's nose and mouth.



A Position of the fetus before birth.
B Dilation: amniotic sac pushed against cervix.
C Dilation: amniotic sac ruptured & dilation complete.
D Expulsion: infant being pushed out.
E Placental stage: afterbirth being expelled.

Figure 2-1. Procedure of normal childbirth (parturition).

b. **Suctioning the Baby's Nose and Mouth.** Then, suction the baby's nose and mouth with a rubber bulb aspirator in this manner:

(1) Squeeze the bulb before inserting the tip.

(2) Place the tip in the baby's mouth or nostrils and release the bulb slowly.

(3) Expel the contents of the bulb into a waste container, repeating the suctioning as needed.

c. **The Baby's Breathing.**

(1) If the baby does not breathe spontaneously, stimulate him by rubbing his back gently or by slapping the soles of his feet. If there is no response, start mouth-to-mouth or mouth-to-nose resuscitation.

CAUTION: NEVER use mechanical resuscitation devices on a newborn.

(2) If spontaneous breathing begins, administer oxygen by mask for a few minutes. Do this until the baby's color is pink.

(3) If the baby still does not start to breathe and the precordial pulse is absent, begin CPR, keeping the baby wrapped in a blanket as much as possible.

d. **Tying the Umbilical Cord.** If the baby has been delivered normally and is breathing well, follow this procedure:

(1) Tie or clamp the cord about eight inches from the infant's navel, using two ties (or clamps) placed two inches apart.

(2) Cut the cord between the two ties, handling the cord gently because it tears easily.

(3) Examine the cut ends of the cord to be sure there is no bleeding. If one of the cut ends is bleeding, tie or clamp the end proximally to the previous tie, or you can clamp the cord and reexamine it.

e. **Making the Baby Safe and Comfortable.** Wrap the baby in a sterile blanket. Be sure to keep the baby warm at all times.

2-14. DELIVERY OF THE PLACENTA

Hopefully, you will have an assistant who can watch the baby while you attend to the delivery of the placenta. The placenta is usually delivered within 20 minutes after the baby has been born. Proceed as follows:

a. Expect some bleeding. One or two cups (less than 500 ml) is normal. This bleeding occurs as a result of the separation of the placenta from the wall of the uterus.

b. Gently massage the mother's abdomen over the uterus. This causes the uterus to contract.

c. You can also put the infant to the mother's breast to stimulate the uterus to contract and control bleeding.

CAUTION: NEVER pull on the umbilical cord in an attempt to hasten the delivery of the placenta.

c. When the placenta is delivered, place it in a basin or plastic bag. Take the placenta to the hospital. The placenta will be examined to be sure that all the afterbirth has been expelled.

d. Examine the perineum which is the skin between the anus and vagina for lacerations. Apply pressure to any bleeding tears.

e. Place a sanitary pad over the vaginal opening.

f. Lower the mother's legs.

g. Prepare for transport.

2-15. ASSESSMENT OF THE BABY - APGAR

a. Life-threatening problems the newborn may have are your first concern. Therefore, begin your assessment by checking the newborn's airway, breathing, and circulation. Included in your initial assessment is the newborn's ability to adapt to his new environment upon birth. The Apgar score is used to measure this adaptability.

b. The Apgar scoring system was devised by an American anesthesiologist to assess the physical condition of a newborn baby. This method assesses various aspects of the newborn's health at one minute after birth and at five minutes after birth. Evaluated are the infant's color (appearance), respiratory effort, muscle tone, reflex irritability (grimace in response to slap), and heart rate (pulse). Each feature is given a score of from 0 to 2. The numbers are added to give a total possible score of 10 (2 points in each of the 5 categories).

c. The Apgar score at the one-minute check and the five-minute check indicate how the newborn is doing in the first few minutes of life. A low score on the one-minute test will often improve on the five-minute test. This indicates that the problem was temporary and has been corrected. Look at tables 2-1 and 2-2 to see the scoring system and the meaning of the scores.

SCORE	0	1	2
Color	Blue Pale	Body pink Extremities blue	Completely pink
Heart Rate	Absent	Less than 100/min	More than 100/min
Respiratory Effort	Absent	Weak cry Irregular breathing	Good crying Regular breathing
Muscle Tone	Limp	Bending of some limbs	Active motion Limbs well-flexed
Reflex Irritability	Absent	Grimace	Grimace and cough or sneeze

Table 2-1. Apgar scoring system.

7 - 10 points	Baby is in excellent condition
5 - 7 points	Newborn is mildly depressed
Lower than 5 points	Newborn is severely depressed

Table 2-2. Meaning of an Apgar score.

2-16. RESUSCITATION OF A NEWBORN

Follow these procedures:

a. Suction the baby's airway.

b. Lay the baby on its side with its head lower than the body.

c. Snap your index finger against the bottom of its feet. If there is no response, continue as follows:

(1) Apply gentle mouth-to-mouth or mouth-to-nose resuscitation.

(2) Continue resuscitation until the baby's breathing starts, then administer oxygen to the infant.

(3) Apply cardiopulmonary resuscitation if there is no pulse.

(4) Continue cardiopulmonary resuscitation until the baby breathes or is pronounced dead.

Section IV. ABNORMAL DELIVERIES

2-17. BREECH PRESENTATION

In a breech delivery, the baby's buttocks appear first instead of the head. Make every effort to get the mother to a hospital if it appears the baby will be a breech delivery. If there is no time to do this, follow these procedures:

a. Make the same preparations as for a normal delivery.

b. Allow the baby's buttocks and trunk to deliver spontaneously.

c. When the infant's legs are clear, support the baby's legs and trunk.

d. Allow the baby's head to deliver spontaneously.

e. After the head delivers, continue as a normal birth.

NOTE: If the head does not deliver in three minutes, create an air passage by inserting your gloved hand in the vagina. Form a V with your fingers on either side of the baby's nose. Push the vaginal wall away from the baby's face, maintaining the airway you have created until the baby's head is delivered.

NOTE: If the head does not deliver in three minutes of establishing the airway, transport the mother to a hospital immediately. Have the mother's buttocks elevated on pillows or blankets and maintain the airway you have created for the baby.

CAUTION: DO NOT allow the head to be delivered forcefully
DO NOT pull the baby out.

2-18. PROLAPSED UMBILICAL CORD

Prolapse of the umbilical cord is a rare occurrence, but it does happen. A prolapsed umbilical cord is one which delivers before the presenting part of the baby. This places the baby in danger of suffocating. The baby's head is pressing against the cord in the birth canal, cutting off the baby's oxygen supply. Perform this emergency care:

a. Put the mother either in a knee-chest position or supine position with her hips elevated on a pillow.

b. Administer oxygen to the mother and keep her warm.

c. With your sterile gloved hand, push the baby's head up into the vagina three to four inches.

CAUTION: Local protocol may not allow this action.

d. DO NOT attempt to push the cord pack or put pressure on the cord.

e. Transport the mother to the hospital immediately while you maintain pressure on the baby's head.

2-19. LIMB PRESENTATION

Transport the mother to the hospital immediately if an arm or leg is presented first. Keep the mother in the delivery position (follow local guidelines.) DO NOT attempt to deliver the baby.

CAUTION: DO NOT try to pull on the presenting limb.
DO NOT try to replace the limb into the vagina.
DO NOT place your hand into the vagina unless there is a prolapsed cord.

2-20. MULTIPLE BIRTHS

Multiple births generally present no unique delivery problems. Follow this procedure:

a. When the first baby is born, tie off the cord to prevent hemorrhage.

b. If the second baby is not delivered within 10 minutes of the first baby, transport the mother and first baby to the hospital for delivery.

NOTE: Babies born in multiple births tend to be small. Like premature infants, babies in multiple births need to be especially protected against a fall in temperature. Keep babies in multiple births warm.

2-21. PREMATURE BIRTHS

A newborn is considered premature if it weighs less than 5.5 pounds (2.3 kilograms) or if the child is born before the completion of seven months of pregnancy. Characteristically, this child is smaller, thinner, and redder than a full-term baby. His head will be relatively larger than that of a full-term baby. Keep the following in mind when you are assisting in a premature delivery:

a. Keep the newborn warm. Maintaining his body temperature is very important. Wrap the baby in a warm blanket or a makeshift incubator. A makeshift incubator could be aluminum foil wrapped around the baby, leaving the face uncovered.

b. Keep the baby's mouth and throat clear of fluids and mucus. Do this by using a bulb syringe to keep the baby's nose and mouth clear of fluid.

c. See that the newborn's umbilical cord is not bleeding. The smallest amount of bleeding may be serious for premature infants.

d. Give oxygen to the baby. DO NOT blow oxygen in a stream directly over the baby's face. The oxygen flow should be low--less than four liters per minute.

e. Ensure that the infant is not contaminated. Premature infants are very susceptible to infection. Wear a surgical gown and mask. Also, keep people (except for your assistant, if you have one) away from the infant.

Section V. COMPLICATIONS OF LABOR AND DELIVERY

2-22. ANTEPARTUM HEMORRHAGE

a. **Definition/Causes.** Antepartum hemorrhage is the patient hemorrhaging before delivery. Three major causes of this condition are placenta abruptio, placenta previa, and uterine rupture.

(1) Placenta abruptio. In this condition, the placenta separates from the wall of the uterus. The separation usually occurs during the last two months of pregnancy. When the placenta separates from the uterine wall, placenta blood vessels rupture, and spontaneous bleeding starts. The mother may go into shock, and the fetus may not have enough oxygen. Signs of this condition include abdominal pain and rapid onset of labor. The uterus becomes rigid. To treat, transport the mother immediately to a hospital and treat for shock.

(2) Placenta previa. Here, the presenting part is the placenta. Since the placenta has many blood vessels, a massive hemorrhage may occur.

(3) Uterine rupture. A uterine rupture is a tearing of a part of the uterus. The patient has sudden, severe abdominal pain, and a rigid abdomen. Bleeding may not be apparent externally, but the patient can have profound shock from internal hemorrhage.

CAUTION: DO NOT attempt to examine the patient internally, regardless of the cause of antepartum hemorrhage.

b. **Management of Antepartum Hemorrhage.** Manage as follows:

(1) Place the patient flat on a stretcher, lying on her side.

(2) Administer oxygen to the patient.

(3) Start at least two large-bore IV lines. Give crystalloid or colloid as rapidly as needed to maintain the patient's blood pressure.

(4) To treat for shock, it may be necessary to apply a MAST garment. If so, inflate the leg sections only of this garment.

2-23. POSTPARTUM HEMORRHAGE

Postpartum hemorrhage is excessive bleeding (hemorrhage) that occurs after delivery. (Normal bleeding after delivery is one to two cups of blood.)

a. **Internal Bleeding.** Causes of internal bleeding after delivery include retained placental products, inadequate uterine contractions, or clotting disorders. Treat as follows:

(1) If the bleeding is profuse, continue uterine massage and put the baby to the mother's breast.

(2) Continue support of the patient's circulation with colloid or saline by IV.

(3) Transport the patient and baby rapidly to a medical treatment facility.

(4) DO NOT examine the mother's vagina or pack the mother's vagina with anything.

b. **External Bleeding.** External bleeding may be caused by perineal tears. Manage such bleeding with pressure. If necessary, open the labia and lay packs at the bleeding site.

2-24. EMERGENCY CHILDBIRTH KEY POINTS

There are five key points to remember in any emergency delivery situation.

a. Most deliveries in emergency childbirth situations progress normally. The mother is actually the one who delivers the baby. Your job is to assist the mother with her work and to protect the baby.

b. Evacuate the mother, if possible, unless her labor has progressed to the second stage.

c. Once the baby's head delivers, the baby's airway must be open, and the baby must breathe.

d. Be alert for signs of excessive bleeding in the mother.

e. If the progress of labor and delivery seems abnormal, evacuate the mother as soon as possible. Get medical advice by radio or telephone.

2-25. CLOSING

Childbirth can occur at any moment of the day or night, under any conditions. You, as a medical specialist, can help in the greatest miracle in life, assisting in bringing a life into the world. Usually, there are no complications. If there is a problem, however, you need to know the warning signs and the appropriate actions to take. Your knowledge as well as your calm, supportive, and professional manner can make the delivery safe for the mother and newborn child.

REVIEW of PROCEDURE FOR NORMAL EMERGENCY CHILDBIRTH

1. Be calm. Reassure the mother that you are there to assist her with the delivery.

2. Provide an environment which is as quiet and private as possible.

3. Position the mother as comfortably as possible and concentrate on helping the mother stay in control

4. DO NOT allow the mother to strain or push during the early stages of labor. This may cause the cervix to become swollen and unable to dilate. Pushing or straining might also cause additional bleeding and distress to the mother.

5. Before or during labor, the amniotic sac should burst. Also, some blood-tinged mucus may appear.

6. Watch for the baby's head to emerge or "crown" at the vagina.

7. Permit the head to deliver between contractions. This avoids perianal tearing and injury to the baby's head from the sudden release of pressure.

8. In a normal delivery, when the baby's head emerges, it faces down and then turns. Check to see if the amniotic sac covers the baby's face.

9. As soon as the baby's face is visible, support the head with one hand and wipe the baby's nose and mouth.

10. Check to see if the umbilical cord is around the baby's neck. If the cord is around the baby's neck, use two fingers to slip the cord over the baby's shoulder. Clamp and cut the cord only if you cannot dislodge it.

11. Normally, the baby's shoulders will rotate, and the upper shoulder will be born first. To help the shoulder out, support the head in an upward position.

12. As the baby's body is expelled, support the head and body with both hands. If possible, note and record the time of the baby's birth and the baby's Apgar point count.

Figure 2-2. Procedures for normal emergency childbirth (continued).

REVIEW of PROCEDURE FOR NORMAL EMERGENCY CHILDBIRTH

13. Place the baby on his back with the head slightly lower than the rest of the body. Turn the baby's head to one side to allow mucus and fluid to drain.

14. Wipe the baby's face with sterile gauze. Suction the baby's nose and mouth again

15. Clamp or tie off and cut the umbilical cord after the cord has ceased to pulsate.

16. As soon as the baby is breathing and crying, dry him in a towel. Then, if you have a blanket, wrap the baby in it.

17. Give the baby to the mother to hold and/or nurse, if possible. Massage the mother's uterus through the abdomen. This aids in the delivery of the placenta and reduces the chances of the mother hemorrhaging.

18. Check the placenta for completeness. Wrap the placenta in a towel and place the towel-wrapped placenta in a plastic bag or container.

19. Place a sterile pad over the mother's vaginal opening. Remove any drainage-soaked linen from under the mother and wrap her warmly.

20. Continue massaging the mother's uterus through the abdomen to ensure the uterus remains contracted. Monitor and record the mother's vital signs.

21. Transport the mother and baby carefully to a medical treatment facility. In a normal delivery, it is not necessary for the transporting vehicle to use its light, siren, or to travel very fast.

Figure 2-2. Procedures for normal emergency.childbirth (concluded).

Continue with Exercises

EXERCISES, LESSON 2

INSTRUCTIONS. Complete the following exercises by writing the answer in the space provided. After you have completed all the exercises, turn to the solutions at the end of the lesson and check your answers.

1. Pains due to contractions of the uterus following childbirth and after the placenta has been expelled are called _____.

2. The rating system for newborn babies which measures their general condition is called _____.

3. A baby delivering buttocks or feet first is being born in the _____ position.

4. Delivery of the baby and placenta through an incision made into the abdominal wall and the uterus of the mother is called a _____ birth.

5. The thin, yellowish fluid which comes from the mother's breast before breast milk is called _____.

6. The appearance of the baby's head at the opening of the vagina is termed _____.

7. The cord which connects the baby and the placenta is called the _____ cord.

8. The rhythmic, involuntary contractions of the uterus which accomplish the process of birth care are commonly termed _____.

9. The first stage of labor in which the cervix dilates from 1 centimeter to 10 centimeters is called the stage of _____.

10. The second stage of labor, which is the period from complete dilation of the cervix to delivery of the infant, is called the stage of _____.

11. The third stage of delivery, the placental stage, is the period after delivery, ending with the _____.

12. List three signs of true labor.

    a. _____.

    b. _____.

    c. _____.

13. If you discover the umbilical cord is wrapped around the baby's neck during delivery, gently try to _____.

14. Be prepared to hold the newborn baby securely because not only may strong contractions cause the newborn to explode from the birth canal but also a newborn is _____.

15. A fertilized egg implanted outside the uterus in the fallopian tube or on an ovary is called an _____ pregnancy.

16. An embryo implanted in the lower uterine segment is called _____.

17. List three conditions which can cause excessive bleeding after delivery of a newborn.

    a. _____.

    b. _____.

    c. _____.

18. To be considered premature, a newborn must weigh less than five and one-half pounds or be born before the completion of _____ months of pregnancy.

19. Treat a woman having third-trimester bleeding by administering 100 percent oxygen, transporting her to a medical treatment facility, but NEVER

    _____

20. An inevitable abortion is _____.

21. Preeclampsia is the first stage of a pregnancy condition which is more commonly called _____.

22. List four signs/symptoms of preeclampsia.

    a. _____.

    b. _____.

    c. _____.

    d. _____.

23. You are treating a pregnant woman who has sustained trauma. It is very important for you to remember that you are treating two patients: the woman and

    _____

24. There is usually time to get a pregnant woman to a hospital for delivery is her contractions are more than _____ apart.

25. List three procedures to follow if the newborn does not breathe spontaneously after you have suctioned his nose and mouth.

    a. _____.

    b. _____.

    c. _____.

26. You have just conducted the five-minute APGAR evaluation of a newborn. These are your findings:

    Color -- completely pink.
    Heart rate -- More than 100 beats per minute.
    Respiratory effort -- Good crying and regular breathing.
    Muscle tone -- Active motion with limbs well-flexed.
    Reflex irritability -- Grimaces/sneezes in response to nose catheter.

    What is the infant's score on the APGAR scale? _____ points

    What does the score indicate about the baby's general condition?

    _____

27. In a breech delivery, you must create an air passage for the baby if its head does not deliver in three minutes. List the steps to take to create this air passage.

    a. _____

    b. _____

    c. _____

28. _____ of the umbilical cord occurs when the umbilical cord delivers before the baby.

29. List four things you should NOT do when a baby's limb delivers first.

    a. DO NOT _____.

    b. DO NOT _____.

    c. DO NOT _____.

    d. DO NOT _____.

30. The term multigravida refers to a woman who _____

    _____.

Check Your Answers on Next Page

SOLUTIONS TO EXERCISES, LESSON 2

1. After pains. (para 2-2c)
2. The APGAR scoring system. (para 2-2i)
3. Breech. (para 2-2k)
4. Caesarian section. (para 2-2m)
5. Colostrum. (para 2-2p)
6. Crowning. (para 2-2r)
7. Umbilical. (para 2-2ll)
8. Labor pains. (para 2-3a)
9. Dilation. (para 2-4a)
10. Expulsion. (para 2-4b)
11. Expulsion of the placenta or "afterbirth." (para 2-4c)
12. You are correct if you listed any three of the following:

    Uterine contractions happening at regular intervals.
    Painful and hard contractions.
    Pain in front and at the back of the abdomen.
    Cervix dilated completely and effaced.
    Fetal head descending.
    Fetal head fixed between contractions.
    Possible bulging or rupture of cervical membranes. (paras 2-3c(1) through (7))

13. Slip the cord over the baby's shoulder and head. (para 2-12b(3)
14. Very slippery. (para 2-13)
15. Ectopic. (para 2-6)
16. Placenta previa. (para 2-7a)

17. Some parts of the placenta are still in the uterus.
Uterine contractions were inadequate.
The mother has a blood clotting disorder. (para 2-23a)

18. Seven. (para 2-21)

19. Perform a vaginal examination. (para 2-7b CAUTION)

20. A spontaneous abortion that cannot be prevented. (para 2-5b)

21. Toxemia. (para 2-8)

22. You are correct if you listed any four of the following:
Edema.
High blood pressure.
Headaches.
Blurred vision.
Abdominal pain. (para 2-8a(1) through (5))

23. The fetus she carries. (para 2-9)

24. Five minutes. (para 2-10b)

25. Rub the infant's back gently.
Slap the soles of the infant's feet.
Start mouth-to-mouth or mouth-to-nose resuscitation. (para 2-13c(1))

26. 10 points
The baby is in excellent condition. (Tables 2-1 and 2-2)

27. a. Insert your gloved hand into the vagina.
b. Create an air passage by placing your fingers on either side of the baby's nose.
c. Then push the vaginal wall away from the infant's face. (para 2-17 NOTE)

28. Prolapsed. (para 2-18)

29. DO NOT attempt to deliver the baby.
DO NOT pull on the presenting limb.
DO NOT try to place the limb back in the vagina.
DO NOT place your hand into the vagina unless there is a prolapsed umbilical cord. (para 2-19 ATTENTION)

30. Has been pregnant two or more times. (para 2-2y)

End of Lesson 2

LESSON ASSIGNMENT

LESSON 3 Pediatric Emergencies.

LESSON ASSIGNMENT Paragraphs 3-1 through 3-22.

LESSON OBJECTIVES After completing this lesson, you should be able to:

3-1. Identify the differences between children and adults.

3-2. Identify information that should be obtained from a general physical assessment of a pediatric patient.

3-3. Identify special considerations of the ill or injured child.

3-4. Identify the signs, symptoms, and treatment for these pediatric emergencies:

a. Foreign body airway obstruction.
b. Anaphylaxis.
c. Croup.
d. Epiglottitis.
e. Acute asthma.
f. Status asthmaticus.
g. Bronchiolitis.
h. Seizures.
i. Febrile convulsions.
j. Meningitis.
k. Sudden infant death syndrome (SIDS).

3-5. Identify appropriate actions for a child who has experienced physical trauma.

3-6. Identify the differences between the vital signs of a child and the vital signs of an adult.

3-7. Identify the points of assessment for a neurological examination of a child.

SUGGESTION After completing the assignment, complete the exercises of this lesson. These exercises will help you to achieve the lesson objectives.

LESSON 3

PEDIATRIC EMERGENCIES

Section I. DIFFERENCES BETWEEN A CHILD'S BODY AND AN ADULT'S BODY

3-1. INTRODUCTION

Children are very special patients. The response of adults who see a child crying in pain and frightened is to try to stop the suffering and correct all the problems. Remember that the adults with the child--his parents, family, friends, and/or bystanders--also need support. As a basic medical specialist, you can best begin to help the child and the adults with him by being calmly objective and efficient. A good way to proceed is for you to identify yourself and start evaluating the child.

3-2. DIFFERENCES BETWEEN CHILDREN AND ADULTS

Look at a child and an adult, standing side by side, and you can see the most obvious difference between the two--size. Usually, the adult is larger than the child. There are, however, other differences between children and adults. For example, a child's volume of blood is much less than an adult's volume of blood. Your awareness and knowledge of such differences is essential to effective management of pediatric emergencies. Some important differences between children and adults include the following:

a. A child's head is larger in proportion to his body than an adult's head is in proportion to his body.

b. In babies, the body's temperature control mechanism is immature and unstable.

c. Children have smaller airways with more soft tissue and a narrowing at the cricoid cartilage.

d. The respiratory rate of a child is faster than that of an adult.

e. A child's trachea opening and the esophagus opening are closer together than in an adult.

f. Children dehydrate easily.

g. Children have less blood than adults. This makes children at greater risk than adults from bleeding to death or developing severe shock from a relatively minor wound.

h. Children have faster heart rates.

i. Young children's extremities are likely to appear mottled. This condition may be a response to cold because of an immature temperature control rather than a response to poor circulation.

j. Children have more skin surface area in relation to body weight than an adult. This fact means that a child loses more fluid across damaged skin; for example, a severely burned child may lose a great deal of fluid.

k. A child has less muscle and fat mass than an adult. Therefore, a child has less padding and is more vulnerable to blunt trauma than an adult.

l. A child's abdominal organs are relatively larger than an adult's. A child's diaphragm is lower than adults. A child, therefore, is more likely to suffer injuries to the liver, spleen, and duodenum.

Section II. PATIENT ASSESSMENT

3-3. PEDIATRIC PATIENT HISTORY

The goals in taking the history of a pediatric patient are the same as the goals of taking an adult's history. You are gathering information and establishing a relationship with the patient. There are some important differences in the way you achieve these goals with a pediatric patient as opposed to an adult patient. You may not always be able to obtain the whole history from the patient. You can ask the mother or father or, if necessary, bystanders. Do not discount the child's information if he is able to give information. His information may be an important source of data about his injury. As you take a child's history, remember these points:

a. You may ask questions using a neutral object; for instance, a doll or a teddy bear. A very young child may not be able to describe where he feels pain. If you ask, however, where his teddy bear hurts, he may be able to tell you. He will probably be describing the area in which he feels pain.

b. Older children are more accurate in their descriptions than adults. An older child's ability to communicate has grown, but he has not yet learned, as adults have, to be careful about what he says publicly.

c. Respect the confidentiality and privacy of the adolescent patient. An adolescent is sometimes unusually concerned about whether or not he is in good health. When you have examined his healthy lungs, for example, tell him that his lungs sound good.

3-4. THE PHYSICAL EXAMINATION

The goals of the pediatric examination are also the same as the goals of adult physical examinations: assessment and management of life-threatening injuries and assessment of other injuries. The techniques vary according to the age of the child. When a child of any age presents with acute, life-threatening illness or injury, conduct the primary survey rapidly and with a minimum of preliminaries. Manage life-threatening conditions as you would in an adult. Being aware of the characteristics and differences of children in the various age groups and conducting the examination accordingly will help make the examination less stressful for both the child and you. Included in the age group differences are the following:

a. **Infant Under 6 Months Old.**

(1) Place the infant on a bed for examination.

(2) Remove the infant's clothes so you can examine him thoroughly.

(3) Provide entertaining distractions for the infant; for example, make cooing, pleasant noises to him. A child this age needs to be distracted when undergoing a physical examination.

(4) Start at the feet and work upward (toe-to-head order). Small children do not like strangers poking at their faces.

b. **Child 6 Months to 24 Months of Age.**

(1) Remove the child's clothes so you can examine him thoroughly.

(2) Examine the child while he is sitting on his mother's lap.

NOTE: A child in this age range will not appreciate being taken from hismother to be put on a bed or stretcher.

(3) Again, start examining the child at his feet and work your way upward. You are examining him in the toe-to-head sequence.

(4) If there is time, try the distracting noises. The cooing and pleasant noises may not work as well as these distractions did with the younger child.

c. **Child 2 Years to 3 Years of Age.**

(1) A child in this age range is usually difficult to deal with.

(a) This child does not like his clothes removed.

(b) He does not want to be touched, especially by strangers.

(c) A child in this age range has no desire to "play" with the medic.

(2) This patient is frightened and in no mood to be conciliatory. Therefore, proceed in this manner:

(a) Decide which parts of the examination are absolutely essential and get through them the best way you can.

(b) Set ground rules. The rules may be that crying is allowed, but kicking and biting are not.

(c) Complete your examination as quickly as possible.

d. **Child 4 Years to 5 Years of Age.**

(1) A child in this age range is usually cooperative except when he is extremely frightened.

(2) This child may be examined on a chair or bed.

(3) He likes to help out; for instance, listen to his own heart.

(4) Generally, there is little problem in completing a standard head-to-toe survey of a child in this age group.

e. **School Age Child.**

(1) The school age child likes to be cooperative.

(2) He appreciates being treated with respect.

(3) He likes an explanation of what you are doing.

f. **Adolescent.** Not all adolescents fit into one category. Some are very immature and childish. At the other extreme, adolescents can be very mature and grown up. When dealing with them, remember the point mentioned before that adolescents are unusually concerned that they are healthy. It is often helpful to reassure an adolescent patient as each part of the examination is completed that things are all right--assuming that things really are all right.

Section III. SPECIAL CONSIDERATIONS OF THE ILL OR INJURED CHILD

3-5. A FRIGHTENED CHILD

A number of things frighten children who are either ill or injured. Included are the following:

a. Disability or discomfort. The child cannot always describe the pain.

b. Presence of strangers and hospital personnel dressed in white.

c. Separation from parents. His parents, his main support system, have taken care of his hurts before. He will be more frightened if they are not with him.

d. Atmosphere of panic, confusion, or distress. A child often senses a stressful atmosphere from stories viewed on television programs or from the parent's comments. For example, the words "The nurse will give you a shot." are very frightening to ill or injured children.

3-6. GENERAL PRINCIPLES

Dealing with a child patient who does not feel well and who is afraid can be difficult, for the child and for you. Here are some helpful tips to improve the situation:

a. Be calm, patient, and gentle.

b. Be honest. NEVER lie to a child patient. Tell him when he will feel pain during the examination. If he wants to know if he is sick or hurt, tell him that he is, emphasizing that you are there to help him.

c. Try not to separate the child from his parents--even if the parents are also injured. The child may imagine the situation much worse than it is if he is not with his parents.

3-7. APPROACHING THE INJURED OR SICK CHILD

Again, children in different age groups will need to be approached a little differently. Look at the following:

a. **Infants.** Allow the mother maximum contact with her infant at the scene of the injury and while the infant is being transferred to a medical treatment facility.

b. **Child 1 Year to 3 Years of Age.**

(1) This child is very dependent on his mother. DO NOT separate the child from his mother if at all possible.

(2) Allow the child to cry.

(3) Explain the procedures you will do to the child. Explain in very simple terms that he can understand.

(4) Do not overload the child with an explanation of events that will occur in the future. These events may be outside his sense of time and serve only to frighten him.

c. **The Preschooler: The 3 to 5 Year Old.**

(1) This child lives in a world of many fears: fear of monsters, fear of aggression, fear of retribution, etc.

(2) The child has some awareness and fear of death.

(3) This is the age when a child most fears the mutilation of his body.

(4) The preschooler tends to view illness and injury as punishment for his own aggressive feelings.

(5) He may have already developed the concept that medical personnel are associated with a variety of unpleasant experiences.

(6) Be very tactful and patient with children in this age range.

(7) Cover bleeding injuries rapidly after assuring this child that none of his limbs or vital components are missing.

(8) Explain what you are doing. Reassure the child frequently that everything is all right.

(9) If possible, allow the child to bring one of his cherished belongings with him.

(10) Tell the child what he can expect at the hospital, but do not overwhelm him.

(11) Reassure the preschooler that it is all right to cry or complain.

d. **The School Age Child.**

(1) Still the school age child's anxieties about pain, death, strangers, and separation from parents. Reassure the child by telling him what you are going to do. Also, tell him that he may feel some discomfort and pain.

(2) A school age child has an increased ability to communicate with adults. This is a help in dealing with this child's fears. You may ask him what he is afraid of and respond to his concerns.

(3) You may be able to use this child's natural curiosity to help him deal with events.

(4) This child likes to be treated with respect and wants adults to be honest with him.

(5) Try to make the school age child a partner in the examination and treatment process. Do this by explaining each procedure to him in detail.

(6) Information tends to reassure a school-aged child rather than frighten him.

(7) Prepare this child for what he will encounter.

(8) Allow this child's questions to guide you in the topics of concern.

e. **The Adolescent.**

(1) An adolescent lives in a period of unstable self-esteem. He always worries about imagined body defects.

(2) The normal fears he feels about his appearance are made worse by illness or injury.

(3) The adolescent is most likely concerned about how his current injury or illness will affect him.

(4) An adolescent needs the support you give a sick child, but at the same time, he wants to be certain that you are treating him like an adult.

(5) Reassure the adolescent, as necessary, but be factual. Question him in the same manner you would question an adult.

Section IV. PEDIATRIC EMERGENCIES

3-8. FOREIGN BODY OBSTRUCTION OF THE AIRWAY

The same things that obstruct an adult's airway can obstruct the airway of a child. Foreign bodies or a swollen tongue can cause airway obstruction. Additionally, children are especially prone to aspirate small objects such as peanuts, coins, and small toys. These objects can cause partial or complete obstruction of the child's airway. Manage this problem as follows:

a. Try to determine the cause quickly. An accurate history of what is obstructing the child's airway is essential to clearing the airway.

b. Find out what the child was doing when the emergency occurred.

c. If the child has been ill with a fever, sore throat, or a barking cough, transport him immediately and rapidly to a medical treatment facility. A child whose breathing is causing a harsh, shrill sound (stridor) should also be transported immediately to a medical treatment facility.

d. Take immediate measures to relieve the foreign body obstruction of a child who was previously healthy and who choked while eating or playing with small toys.

e. If the child has good air exchange, encourage him to cough spontaneously. DO NOT interfere with a child's attempts to cough out a foreign object.

f. If the child has poor air exchange, ineffective coughing, high-pitched noises on inhalation, increased respiratory distress, and/or cyanosis, manage the condition as if the partial obstruction was a complete obstruction. See the next paragraph.

g. If there is complete airway obstruction (no air exchange at all), treat with a combination of back blows and chest thrusts.

NOTE: For complete information about opening a child's airway, refer to the booklet "Standards and Guidelines for Cardiopulmonary Resuscitation and Emergency Cardiac Care," JAMA, Vol. 255, No. 21, June 6, 1986.

CAUTION: DO NOT probe blindly for a foreign object you cannot see.

3-9. ANAPHYLAXIS

Anaphylaxis (anaphylactic shock) is an immediate, severe hypersensitivity. This allergic reaction may occur to a person who comes in contact with something to which he is extremely allergic. This type of shock is a true emergency, requiring medications to combat the allergic reaction.

a. **Causes of Anaphylaxis.** Causes of anaphylactic reaction include:

(1) Insect stings--bees, yellow jackets, wasps, hornets, fire ants.

(2) Ingested substances--spices, berries, fish and shellfish, certain drugs.

(3) Inhaled substances--dust, pollens, chemical powders.

(4) Injected substances--antitoxins and drugs like penicillin.

(5) Absorbed substances--certain chemicals when they come in contact with the skin.

b. **Signs/Symptoms of Anaphylaxis.** An anaphylactic reaction affects many of the systems of the body, including the following: integumentary system (skin), respiratory system, gastrointestinal system, cardiovascular system, urinary system, and the nervous system. Look at the way each of these systems is affected.

(1) Integumental system (the skin). Signs and symptoms include:

(a) Redness (redness of the skin).

(b) Urticaria (hives).

(c) Angioedema (skin and subcutaneous tissues swell).

(d) Pruritus (itching and burning skin, especially around the face and chest).

(2) Respiratory system. The child develops bronchospasms with wheezing (the bronchial tubes get smaller, spasmodically causing wheezing). The tissues of the larynx swell, causing the child to make a harsh, respiratory sound when he breathes. He also becomes hoarse.

(3) Gastrointestinal system. The child experiences vomiting, abdominal cramps, and diarrhea.

(4) Cardiovascular system. Cardiac blood vessels collapse. Tachycardia (abnormally fast heart beat) occurs, and the heart beat itself is irregular.

(5) Urinary system. The child is incontinent (cannot control the passage of urine or feces).

(6) Nervous system. The child has seizures and is acutely anxious.

NOTE: In emergency pediatrics, anaphylaxis is, fortunately, very rare. When it occurs, the cause is usually an insect sting.

c. **Treatment for Anaphylaxis.** Follow these procedures:

(1) Administer aqueous epinephrine in the dosage 1:1000, 0.1 to 0.3 ml subcutaneously. The dosage may be repeated in 15 minutes.

(2) Apply a tourniquet above the injection site of antigen or the inoculation site if the injury is a bit or a sting. An assistant should inject 0.2 ml of aqueous epinephrine in the dosage 1:1000 around the antigen injection site or sting.

(3) Quickly begin administering normal saline intravenously to support blood pressure and treat hypovolemia.

(4) Arrange for the monitoring of blood pressure and an electrocardiogram for cardiovascular complications.

(5) Maintain a patent airway. View the uvula and pharynx frequently, checking for evidence of swelling.

3-10. CROUP (LARYNGOTRACHEOBRONCHITIS)

Croup is a common viral, sometimes bacterial, infection which occurs in a child's upper airways. Children between six months and four years experience this illness. The condition is rarely seen in older children.

a. **Signs/Symptoms of Croup.** A child who has croup has usually just had a cold or other infection. Signs and symptoms of croup include the following:

(1) Airway obstruction caused by edema (swelling of tissues).

(2) Hoarse voice with high-pitched sounds.

(3) A whooping sound when the child breathes in.

(4) Avoidance of lying down. The child breathes easier in an upright position than when he is lying down. Therefore, he resists efforts of adults to make him lie down.

(5) As edema in the airway increases, the child's use of his accessory muscles of respiration causes the following:

(a) Nasal flaring.

(b) Tracheal tugging.

(c) Retractions of intercostal and suprasternal muscles.

(6) Signs of hypoxia (abnormal reduction of oxygen in body tissues; also called oxygen deficiency) such as:

(a) Restlessness.

(b) Increased pulse rate.

(c) Eventually, cyanosis.

NOTE: A croup attack usually occurs at night. A child with croup will seem to be fairly healthy during the day, with some hoarseness. He goes to bed and begins to have a harsh, metallic cough. This cough progresses to a loud, barking, alarming noise around midnight.

b. **Treatment for Croup.** Follow these procedures:

(1) Administer humidified oxygen by mask.

(2) Initiate an IV of dextrose in water at the rate of 5 ml per kilogram of the child's weight.

(3) Place the child in the most comfortable position for his breathing.

(4) Transport the child to a medical treatment facility.

NOTE: Similar signs and symptoms may imply upper airway obstruction by a foreign object. If this is the case, cautiously visualize the airway with a light. Use extreme gentleness to avoid causing a laryngospasm (spasm of the larynx).

NOTE: The initial treatment given at home to a child with croup is for the parents to run a hot shower to humidify the air in the bathroom. A parent then sits close to the shower with the child.

3-11. EPIGLOTTITIS

Epiglottitis is a condition in which the epiglottis becomes inflamed. This inflammation is caused by a bacterial infection of the patient's epiglottis. The inflamed epiglottis swells and becomes a "cherry-red" color, resulting in an obstructed airway.

a. **Signs/Symptoms of Epiglottitis.** Children who have epiglottitis are usually over four years old. Signs and symptoms include the following:

(1) Pain on swallowing (dysphagia).

(2) Frequent drooling. The presence or absence of drooling is a way of differentiating this condition from croup. The child with croup will not be drooling.

(3) High fever, perhaps.

(4) Respiratory distress.

b. **Treatment for Epiglottitis.** Follow these procedures:

(1) Administer humidified oxygen.

(2) Initiate an IV of dextrose in water at the rate of 5 ml per kilogram of the child's weight. DO NOT spend a lot of time on starting an IV. If there is a problem inserting an IV, forget it and transport the patient to a hospital immediately!

(3) Let the child assume the position which is most comfortable for him.

(4) Transport the child to a medical care facility immediately. Epiglottitis can only be treated in a medical facility. Often (50 percent of the cases), the condition requires a tracheotomy or intubation.

CAUTION: Children with epiglottitis are in grave danger from airway obstruction. NEVER, NEVER, NEVER place an instrument in the mouth of a child with epiglottis. Anything put in the throat will cause severe laryngospasm, resulting in swelling which obstructs the airway.

WARNING

Epiglottitis is a medical emergency! The child must be transported calmly and quickly to a hospital.

3-12. ACUTE ASTHMA

Asthma is a congestive pulmonary disease characterized by attacks of wheezing and difficult breathing. Smooth muscles that lie in the walls of the smaller bronchi and bronchiolus become increasingly responsive to a variety of stimuli (pollens, dusts, milk, shellfish, fumes, etc.). This causes edema in the bronchi and congestion of the lining membranes of the bronchi. Additionally, the membranes which line the bronchi secrete a great deal of mucus which is hard to dislodge (cough up).

a. **Signs/Symptoms of Acute Asthma.** Included are the following:

(1) Interference of normal passage of air in and out of the lungs.

(2) Exhalation particularly difficult. Not all the inhaled air can be exhaled. With each breath the child takes, some air is trapped in his lungs.

(3) Chest becomes overinflated, and the sounds are overloud when the chest is percussed.

(4) Ventilation (the cyclic process of breathing in and breathing out) is progressively impaired.

(5) Worsening of these conditions:

(a) Hypoxia--abnormal reduction of oxygen in the body tissues; also called oxygen deficiency.

(b) Hypercarbia--abnormally high concentration of carbon dioxide in the blood.

(c) Acidosis--increase in the hydrogen ion concentration in body fluids accompanied by a lowering of the pH level.

(d) Dehydration--decrease in the amount of water in the body or body tissues.

(6) As acidosis worsens, bronchoconstriction (narrowing of the interior space of the bronchi) becomes severe. Dehydration causes the mucus plugs to become thicker and more tenacious. This all causes a continuous cycle.

b. **Treatment of Acute Asthma.** An acute attach of asthma is treated as a respiratory emergency. Treat as follows:

(1) Give oxygen to treat the child's oxygen deficiency.

(2) Administer bronchodilator medication. The drug of choice is epinephrine, 1:1000 0.01 ml/kg to 0.3 ml is the maximum dosage. The dosage may be repeated once or twice every 20 minutes. An aerosolized bronchodilator through a nebulizer may be used.

CAUTION: DO NOT administer epinephrine after the patient has used an over-the-counter (OTC) bronchodilator. Otherwise, the patient may experience severe circulatory disease or cardiac arrhythmias.

(3) Encourage fluids to treat dehydration and to loosen mucus secretions.

(4) Administer bicarbonate to treat acidosis.

(5) Some children may require steroids for a period of time to reduce the edema and congestion of the bronchial membranes.

3-13. STATUS ASTHMATICUS

Status asthmaticus is a severe, prolonged asthma attack that does not respond to conventional methods of treatment. This condition is considered a medical emergency. Proceed in the following manner with patients having this type of asthma attack:

a. **History**. It is important to know the patient's recent medical history. Ask the questions listed below of or about the patient. Then, record that information.

(1) How long has the child been wheezing?

(2) How much fluid has the child taken?

(3) Has the child had a recent infection?

(4) What medications has the child been given? When were the medications given, and what was the amount of each medication?

(5) Is the child allergic to anything? If so, what?

(6) Has the child been hospitalized recently?

b. **Physical Examination**. Give the child a physical examination, paying particular attention to the following:

(1) General appearance. Is the child sitting or lying down? In how much distress is the child? A child having a mild asthmatic attack will lie down but prefers to sit. A child having a severe asthmatic attack appears exhausted and may be unable to move from the position he is in.

(2) State of consciousness. Very serious signs include sleepiness, stupor, and coma. These signs indicate the patient is experiencing severe degrees of hypercarbia, hypoxemia, and acidosis.

WARNING

A patient having an asthma attack and being very sleepy at the same time is seriously ill.

(3) Vital signs. As the asthma attack becomes more severe, the patient's pulse becomes weaker and faster, and his blood pressure falls.

(4) Skin and mucous membranes. Check the child's skin for signs of dehydration. Check his lips and nailbeds for evidence of cyanosis.

(5) Chest sounds.

(a) Listen to the child's respiratory sounds. You are checking for rales (abnormal respiratory sounds, sounding high-pitched or like rubbing hair together near your ear), and wheezes (high- pitched, whistling sounds). The patient's chest sounds are noisy in a mild or moderate asthma attack. As the asthma attack progresses, there are increased breath sounds with loud, expiratory wheezes and sometimes rales. As the asthma attack becomes even more severe, the patient's breath sounds are harder and harder to hear.

(b) Be sure to listen to the child's entire chest. A child with localized wheezing may have a foreign body obstructing his airway. A child with asthma, however, will have wheezing which can be heard all over his chest.

CAUTION: A silent chest means danger!

c. **Treatment.** Treatment is similar to that for acute asthma and includes the following:

(1) Administer humidified oxygen by mask.

(2) Begin an IV lifeline with D5/W or D5/.25 normal saline.

(3) Give epinephrine 1:1000 SQ in the dose of 0.01 mg per kilogram. Repeat in 20 to 30 minutes.

CAUTION: Remember, the use of epinephrine may be hazardous to the child if he has already taken high doses of bronchodilator medication by inhalation! To avoid such a medication mistake, be sure you have taken a good history of the child.

(4) You may administer aerosolized bronchodilator through the nebulizer. Epinephrine or bronchosol may be given. Monitor the child's heart rate and discontinue the nebulizer if his heart rate exceeds 160 beats per minute or if dysrhythmias develop.

(5) Encourage the child to cough up any secretions as he takes the bronchodilator treatment.

(6) Be prepared to administer these medications:

(a) Aminophylline, in the dosage 2 to 4 mg per kilogram diluted in at least 10 ml of D5/W, to be given IV over no less than 15 minutes.

(b) Hydrocortisone in the dosage 5 mg per kilogram drawn up in a syringe to be added to the IV bag.

(7) Monitor the child's cardiac rhythm.

3-14. BRONCHIOLITIS

Bronchiolitis is the inflammation of the small bronchi (the bronchiolus) caused by a viral infection. This is a severe respiratory illness in infants and young children under two years of age.

a. **History.** Be sure to take a good history. Ask the following questions:

(1) Is there a family history of asthma or allergies?

(2) Does the child have known allergies? If the answer is yes, he could have asthma.

(3) Has the child had a low-grade fever recently? If the answer is yes, he may have bronchiolitis.

b. **Signs/Symptoms.** Included are the following:

(1) Look for signs of infection such as low-grade fever.

(2) Look for signs of respiratory distress such as wheezing, coughing, and sputum production.

(3) The child's age is important. If he is under one year and has the signs and symptoms of bronchiolitis, he is likely to have bronchiolitis.

c. **Treatment.** Treat as follows:

(1) Administer humidified oxygen by mask.

(2) Place the child in a semi-sitting position with his neck slightly hyperextended.

(3) Give epinephrine 1:1000 subcutaneously (SQ) if ordered by a physician.

(4) Prepare a laryngoscope and endotracheal tube of the appropriate size.

(5) Monitor the child's cardiac rhythm.

3-15. SEIZURES

Seizures are caused by abnormal discharging of a group or groups of neurons in the brain. The abnormal electrical discharge can be caused by head trauma, meningitis, elevated core temperature, or physiological abnormalities.

a. **History.** Ask these questions of or about the child:

(1) Has the child ever had a seizure before? If so, how often? Have the seizures occurred when the child has had a fever?

(2) How many seizures has the child had?

(3) Does the child have a history of trauma? Diabetes? Headache? Stiff neck?

(4) If possible, obtain a description of the seizure. Was the child's whole body affected or just one area of the body? Did the seizure start in one area of the body and progress to other body areas? Did the eyes deviate to the left or to the right?

b. **Physical Examination.** Pay particular attention to these areas while you are examining the child:

(1) Level of consciousness. Observe and note what the child can and cannot do. Does the child respond in a logical manner to verbal stimuli? Does the child just drift off to sleep abnormally? If he does this, can he be awakened easily? What kind of stimuli is necessary to awaken a child who has drifted off to sleep? Can talking in a normal voice wake him or must you scream to waken him? If nothing can waken him, does he respond to physical stimuli by moving?

(2) Evidence of fever or dehydration. A child with fever will have hot, flushed, dry skin; generally, poor skin turgor.

(3) Signs of injury. Check for signs of trauma to the head, tongue, or anywhere else on the body.

(4) Neurological state. Perform a thorough neurological examination. This examination will be repeated several times. The changes in the child's condition and the direction of those changes are very important. When you are doing the neurological examination, be particularly attentive to these areas:

(a) Position of the child. In what position was he found? His position can sometimes indicate certain injuries.

(b) State of consciousness. This is part of the neurological examination and is mentioned in paragraph b(1) above.

(c) Speech. If the child is conscious, is his speech clear or garbled? Even if his words are not in the proper order, is he still able to understand what is said to him? Can he follow simple commands; for example, "Squeeze my hand."

(d) Movement and sense of pain. When you are moving the child's extremities, does he know that you are moving his fingers or toes up or down? Does he realize that you are pricking his toe with a pin? Does an unconscious child react to painful stimuli; for example, pin pricks.

(e) Pupils of the eyes. Look at the child's pupils to see if they are equal in size. Are his pupils abnormally constricted or dilated?

(f) Eye movements. Can the child's eyes follow your moving finger?

c. **Treatment.** The goal of treatment is to maintain the airway and prevent the patient from injuring himself. To do this, proceed as follows:

(1) Sponge the child with lukewarm (tepid) water if he has a fever.

(2) Place the child on the floor away from objects that can cause injury. DO NOT restrain him.

(3) Maintain the child's airway.

(4) Administer oxygen to him and assist with ventilations, if necessary.

(5) Start an IV with D5/W (5 percent dextrose solution in water) by microdrip infusion (well secured), as ordered.

(6) Be prepared to give D/50 (50 percent dextrose injection) in the dosage of 1 ml/kg.

(7) Once in the treatment facility, if the child's seizures do not stop, prepare to give diazepam (Valium®) in a dose of 0.3 mg/kg. Give this medication in a slow IV over a period of 1 to 3 minutes.

3-16. FEBRILE CONVULSIONS

During the first two years of a child's life, convulsions are far more common than at any other time in his lifetime. Fever-caused convulsions may occur in a child up to six years of age. What happens is that in a child, the brainstem (the body's temperature regulator) does not mature until the child is about four years of age. A child's temperature may rise too quickly when he has a disease, causing convulsions. Usually, a child who has febrile convulsions suffers no ill effects as long as the convulsions are occasional, brief, and limited to his early childhood.

a. **Signs/Symptoms of Febrile Convulsions.** The child will have a high fever of 102^{o} F to 106^{o} F (38.9^{o} C to 41.1^{o} C). Some children will convulse at lower temperatures because their seizure threshold is low. Such children may have a convulsion with a temperature of 100^{o} F to 102^{o} F.

b. **Treatment for Febrile Convulsions.** Follow these procedures:

(1) Take the child's temperature and record it.

(2) Wash your hands and assemble the following equipment:

(a) Basin containing tepid (lukewarm) water.

(b) Bath towel (two for an older child).

(c) Washcloth.

(3) Undress the child and place the bath towel under the child (to absorb moisture and prevent chilling).

(4) Cover an older child with a second bath towel.

(5) Expose the child's arms and chest. Put the washcloth in the tepid water; then, squeeze excess water from the washcloth. Sponge the child gently with the washcloth, making long, even strokes. Apply gentle friction with your hands, following the sponging. Repeat this process two or three times, giving attention to the child's armpit area.

(6) Sponge the child's abdomen, legs, and feet in the same manner.

(7) Turn the child on his abdomen and sponge his back.

(8) Sponge the inner surface of the child's groin and the perineal region. (Sponge the anal region last.)

(9) DO NOT continue this process longer than 15 to 20 minutes.

(10) Take the child's temperature every half hour until his temperature is reduced to an acceptable level.

CAUTION: The child's temperature may continue to fall after you have sponged him.
Wait 30 minutes before resuming the sponge bath. Leave the child uncovered following the sponge bath, only if his temperature remains elevated.

3-17. MENINGITIS

This illness is an inflammation of the meninges of the brain and/or the spinal cord. Meningitis can occur to a child of any age. Children between six and twelve months of age are the most likely to have meningitis, with the illness often following a respiratory infection. The illness can begin either gradually or abruptly.

a. **Signs/Symptoms of Meningitis.** Included are the following:

(1) In a young infant, a high-pitched cry.

(2) A stiff neck in a late stage of the illness.

(3) Fever.

(4) Altered state of consciousness.

(5) Rash (with meningococcal meningitis).

(6) Nausea.

(7) Convulsions.

b. **Treatment for Meningitis.** Treat with antibiotics such as ampicillin or chloramphenicol.

3-18. SUDDEN INFANT DEATH SYNDROME (SIDS)

a. **Appropriate Title.** Sudden infant death syndrome, commonly known as "crib death," is the sudden, unexplained death of an infant without any warning. SIDS usually occurs in apparently normal, healthy infants. Currently, no one is sure how to prevent the death of an infant from SIDS. A thorough autopsy afterward fails to reveal the cause of death. SIDS kills about 10,000 infants each year, the infants being between the ages of 1 week and 12 months. A number of theories have been proposed to explain SIDS, but no one has been able to positively identify the cause.

b. **Actions Following an Infant's Death.**

(1) Initiate CPR. Even though the infant may have been dead for some time, initiating and continuing CPR until you reach the hospital allows the family to feel that everything possible was done.

(2) Provide support. Give the family support and help relieve their feelings by guilt. Parents of a child who has died from SIDS often feel very guilty. Remind these parents that SIDS happens to babies who seem to be very healthy and who are receiving the best parental care.

Section V. TRAUMA IN CHILDREN

3-19. IMMEDIATE ACTION

The first actions for a child who has experienced trauma are the same as for an adult. You should:

a. Establish an airway and stabilize the child's spine.

b. Make sure the child is breathing and has a heart beat. If he does not, perform cardiopulmonary resuscitation (CPR). The sequence of steps for CPR for a child is as follows:

(1) Determine the child's unresponsiveness or respiratory difficulty.

(2) Call for help. If you (the rescuer) are alone and the child is obviously not breathing, perform CPR for 1 minute. Then, call for help.

(3) Position the victim. Carefully place the child lying on his back on a firm, flat surface. Remember to turn the child's body as a unit. DO NOT allow his head to roll, twist, or tilt backward or forward as you move him.

(4) Open the child's airway. Use the head-tilt/chin-lift method or the jaw-thrust method.

(5) Determine whether the child is breathing. Continue breathing for the child if he is not breathing. If he is breathing, make sure the airway remains open.

(6) Breathe for the victim. Use rescue breathing to fill the child's lungs with oxygen. An infant's or child's lungs are smaller than those of adults. Remember, therefore, that the proper amount of air is the volume that causes the child's chest to rise and fall.

(7) Circulation. Check the child's pulse. For a child less than one year, check the brachial pulse. Check the carotid pulse of a child one year or older.

(8) Perform chest compressions. Remember that chest compressions are always accompanied by rescue breathing. Be sure to coordinate the chest compressions and rescue breathing.

NOTE: For complete information about Pediatric CPR, refer to the booklet "Standards and Guidelines for Cardiopulmonary Resuscitation and Emergency Cardiac Care," JAMA, Vol. 255, No. 21, June 6, 1986.

c. Control bleeding. Use pressure to control bleeding rather than a tourniquet.

d. Treat for shock. Shock is a condition of low blood pressure which prevents the body tissues from receiving enough oxygen. Treat by keeping the child flat. Provide comfort and reassure the child.

e. Immobilize any neurological or musculoskeletal injuries. DO NOT try to straighten out any obvious deformity; for example, an arm at a strange angle. Follow the principle, "Splint them where they lie." Items which can be used to splint a body part include a rolled-up newspaper, a blanket, or a pillow.

NOTE: Children respond differently in trauma. A child's blood vessels are capable of extreme vasoconstriction. For that reason, hypotension may not occur until a child has lost a major portion of his entire blood volume.

3-20. VITAL SIGNS

There are a number of important differences between the vital signs of a child and those of an adult. Note the following:

a. **General Information.**

(1) A child's vital signs must be checked and recorded more frequently than the vital signs of an adult.

(2) Your subjective impression of the child may be more important than any one of the child's vital signs.

(3) Children have incredible compensatory mechanisms that conceal physiological insult for some time. For example, a child may have a fever (a temperature above normal) and still behave as though he feels fine. So, a child may have an infection and display no signs or symptoms of illness. Sometimes only after the child's coping mechanisms have been exhausted will you see changes in the child's vital signs.

(4) Once a child's vital signs begin to change for the worse, the changes occur rapidly, and the child's condition deteriorates.

b. **Blood Pressure.**

(1) Younger children generally have lower blood pressures, higher pulses, and higher respiratory rates than adults.

(2) A child's blood pressure should be checked with the correctly-sized cuff. The proper size is about two-thirds of the circumference of the child's upper arm.

c. **Respiration.**

(1) Younger children generally have higher respiratory rates than adults.

(2) A child or infant's respirations can be checked by placing your hand on his stomach. Take the respiration rate frequently. An increase in the respiration rate may be significant.

d. **Shock.**

(1) An early warning sign of shock in a child may be tachycardia (abnormally fast heart beat).

(2) Prolonged capillary refill is another early warning sign of shock in a child. To check capillary refill, use the blanch test. Press on the child's nail bed until you exert enough pressure to cause the area under the nail to show white. To be considered normal, the color in that area should return by the time you repeat the words "capillary refill." That time is approximately two seconds.

e. **Heart Beat/Heart Rate.**

(1) Bradycardia (abnormally slow heart beat), a worrisome sign in children, may be caused by pressure in the child's skull, depressant drugs, or some comparatively rare medical condition.

(2) A child's heart rate is somewhat higher than the heart rate of an adult. A child's heart rate is heard more centrally in his chest than the adult's heart rate. Therefore, take a child's heart rate by placing the stethoscope below the scapula on the left side of the child's back.

f. **Pulse.**

(1) In infants and toddlers, the carotid pulse is very difficult to feel because the neck of an infant or a toddler is short. The most reliable pulse to check is the apical pulse. (The apial pulse is taken by placing the stethoscope near the apex of the sternum.)

(2) A child's rapid pulse may be caused by shock, fever, or oxygen deficiency. Fear may also cause a rapid pulse.

(3) The farther away from the heart a child's peripheral pulse can be detected, the better the child's cardiac output.

g. **Fever/Temperature.**

(1) Each centigrade degree of fever in a child is normally accompanied by a 10 percent increase in pulse and respiration rate.

(2) Children's temperatures are much more important than the temperatures of adults. A child's temperature can change rapidly.

(3) An elevated body temperature in a child can produce these results:

(a) Dehydration:

1 Nausea, vomiting, and fainting.

2 Weak and rapid pulse.

3 Pale skin.

4 Sunken eyes.

5 Shrunken tongue.

6 Skin which remains "tented" after being pinched.

7 Sunken fontanelle (the soft spot) in an infant.

(b) Convulsions. A rapid rise in body temperature may cause a child to have convulsions.

(4) Lower a child's temperature in this manner:

(a) Give the child fluids by mouth.

(b) Sponge bathe the child's face, hands, and feet. If necessary, undress the child and bathe him in tepid water.

(c) Stop bathing the child if he starts shivering.

(5) Low temperature in a child may be a sign of shock or other metabolic problems; for example, near drowning or exposure.

3-21. NEUROLOGICAL ASSESSMENT

The neurological assessment is very important and will be repeated several times after the initial examination. A comparison of the findings of later neurological examinations with the first assessment will show changes, if there are any, in the child's condition. The direction of these changes will determine how his physical condition is to be treated. With that in mind, proceed with the neurological assessment as follows:

a. **Level of Consciousness.** Ask the parent if the child is responding normally. Is the child able to recognize familiar objects and people. Classify the child according to the following:

(1) Alert and oriented. The child can focus on you and answer questions.

(2) Responsive. The child seems to be unconscious but has these responses:

(a) Opens his eyes if you speak to him or tries to answers questions.

(b) Tries to avoid pain.

(c) Displays pupillary response and eye movement.

(d) Displays muscular strength.

(e) Has normal reflexes.

b. **Pupils.** Are the child's pupils equal in size? Do the pupils of his eyes respond to light?

c. **Check of Upper Body.** Check the child's head, neck, and chest observing for signs of trauma.

d. **Response to Stimuli.** Does the child respond to verbal and/or painful stimuli?

e. **Movements.** Is the child able to move his extremities purposefully?

f. **Fluid from Ears.** Does the child have clear or bloody fluid coming from his ears.

3-22. CLOSING

The material covered in this lesson is not only vital to you as a medical specialist but also as a parent, relative, or friend. A child in good health has a different view of the world than an adult and, therefore, needs to be dealt with differently. The sick or injured child may be coping with fear and pain, causing him to be a difficult patient. Your patience and understanding of the child will ease his mind, allowing you to treat him and help him on the road to recovery.

Continue with Exercises

EXERCISES, LESSON 3

INSTRUCTIONS. Complete the following exercises by writing the answer in the space provided. After you have completed all the exercises, turn to the solutions at the end of the lesson and check your answers.

1. List four differences between infants/children and adults.

   a. _____.

   b. _____.

   c. _____.

   d. _____.

2. Complete these statements of points to consider when you are conducting a physical examination of an infant or child.

   a. An infant (less than 6 months old) does not mind his clothes being removed for a physical examination, but a child _____ old does not want to have his clothes removed for a physical examination. In fact, this child does not want to be touched.

   b. In what two age groups should the physical examination be conducted toe-to-head rather than the usual head-to-toe sequence?

      _____

      _____

   c. A child _____ of age should be left on his mother's lap while you examine him.

   d. An adolescent needs reassurance that, in spite of the current illness or trauma, he is basically _____.

   e. A child who is _____ old may be examined on a chair or a bed. He likes to help out during the examination.

3. List three general principles to remember in dealing with a child who is ill.

   a. _____.

   b. _____.

   c. _____.

4. Match the definition in column II with the name of the pediatric emergency in column I. Write the correct Roman number (I, II, etc.) on the appropriate line in column I.

Column I	Column II
A ____ Status asthmaticus	I. A condition caused by abnormal discharging of a group or groups of neurons in the brain.
B. ___ Croup	II. A severe type of allergic reaction sometimes caused by insect stings (bee stings), inhaled substances (chemical powders), and injected substances (penicillin).
C. ___ Meningitis	III. Fever-caused convulsions which sometimes occur in a child up to six years of age.
D. ___ Seizures	IV. A congestive pulmonary disease characterized by attacks of wheezing and difficulty in breathing.
E. ___ Anaphylactic shock	V. An inflammation of the meninges of the brain and/or the spinal cord.
F. ___ Acute asthma	VI. A severe, prolonged asthma attack that does not respond to conventional methods of treatment.
G. ___ Febrile convulsions	VII. A common viral, sometimes bacterial infection which causes obstruction in a child's upper airways. This condition usually occurs at night after the child has gone to bed. A whooping sound can be heard when the child breathes in.

5. The illness in which the epiglottis becomes inflamed (swelling and turning a "cherry-red" color) is _____.

6. A child with a low grade fever, some respiratory distress such as wheezing, and who is under the age of one year is likely to have _____.

7. Sudden infant death syndrome may be defined as _____

   _____.

8. Initial treatment for a child with croup includes:

   a. Administering _____ by mask.

   b. Initiating an IV of dextrose in water.

   c. Placing the child in the _____ position.

   d. Transporting the child to _____

9. A child is having a status asthmaticus attack. His pulse becomes _____.

   _____. His blood pressure _____.

10. A child having an asthma attack may have used an over-the- counter bronchodilator. If he has, he must not be given the medication _____. Taken after the use of an OCB, this medication can cause the child to have severe circulatory disease or _____.

11. It is very important for you to do a thorough neurological examination when you are helping a child having seizures. The reason for this is _____

    _____.

12. List four signs/symptoms of epiglottitis.

    a. _____.

    b. _____.

    c. _____.

    d. _____.

13. Follow this procedure when performing CPR on a child:

    a. Establish an airway and stabilize the child's _____.

    b. Make sure the child is breathing and has a _____.

    c. Control bleeding by using _____ rather than a tourniquet.

    d. Treat the child for shock by keeping him _____ (what position?)

    e. Immobilize any neurological or musculoskeletal injuries, taking care not to

       _____.

14. When a child's vital signs begin to change for the worse, the changes occur _____. (slowly or rapidly?)

15. In comparison to the same vital signs in adults, younger children have:

    a. _____blood pressure than adults.
       (Lower or Higher)

    b. _____ pulse rates than adults.
       (Lower or Higher)

    c. _____ respiratory rates than adults.
       (Lower or Higher)

16. List four areas to check when you are performing a neurological assessment of a child.

a. _____.

b. _____.

c. _____.

d. _____.

Check Your Answers on Next Page

SOLUTIONS TO EXERCISES, LESSON 3

1. You are correct if you listed any four of the following:

   In proportion to their respective bodies, a child's head is larger than an adult's head.
   A baby's temperature control mechanism is immature and unstable.
   Children have smaller airways with more soft tissue and a narrowing at the cricoid cartilage.
   The tracheal opening and the esophagal openings of children are closer together than the same openings in adults.
   Children dehydrate easily.
   Children have less blood than adults.
   Children have faster heart rates than adults.
   The extremities of children are likely to appear mottled because of an immature temperature control rather than the result of poor circulation.
   Children have more skin surface area in relation to body weight than adults.
   A child has less muscle and fat mass than an adult.
   A child's abdominal organs are relatively larger than an adult's.
   A child's diaphragm is lower than the diaphragm of an adult.
   paras 3-2a through l)

2. a. Two to three years.
   b. Infants; two to three years of age.
   c. 6 to 24 months.
   d. Healthy.
   e. Four to five years. (paras 3-4b(1) and (2), c(1)(a) and (b), c(1)(a)4., c(1)(b)3., para 3-4d(1), (3))

3. Be calm, patient, and gentle.
   Be honest. Never lie to a child patient.
   Try not to separate the child from his parents. (paras 3-6a through c)

4. A -- VI
   B -- VII
   C -- V
   D -- I
   E -- II
   F -- IV
   G -- III
   (paras 3-9, 3-10, 3-10a(3), a(6)(c) NOTE, 3-12, 3-13, 3-15, 3-16, 3-17)

5. Epiglottitis. (para 3-11)

6. One year.
   Bronchiolitis. (paras 3-14b(1) through (3))

7. The sudden, unexplained death of an infant without any warning. (para 3-8a)

8. a. Humidified oxygen.
   b. (no answer required)
   c. Most comfortable breathing.
   d. A medical treatment facility. (paras 3-10b(1) through (4))

9. His pulse becomes weaker and faster.
   His blood pressure falls. (para 3-13b(3))

10. Epinephrine.
    Cardiac arrhythmias. (para 3-12b NOTE)

11. The differences in the first and subsequent neurological examinations indicate the direction of a child's condition. (para 3-15b(4))

12. Pain on swallowing.
    Frequent drooling.
    High fever, possibly.
    Respiratory distress. (paras 3-11a(1) through (4))

13. a. Spine.
    b. Heart beat.
    c. Pressure.
    d. Flat.
    e. Try to straighten out any obvious deformity. (paras 3-19a through e)

14. The child's condition deteriorates rapidly. (para 20a(4))

15. a. Lower.
    b. Higher.
    c. Higher. (para 3-20b(1))

16. You are correct if you listed any four of the following:

    Level of consciousness.
    Pupils of the eyes.
    Physical assessment of the upper body.
    Response to stimuli.
    Movements of the extremities.
    Fluid from ears. (paras 3-21a through f)

End of Lesson 3

LESSON ASSIGNMENT

LESSON 4	Child Abuse.
LESSON ASSIGNMENT	Paragraphs 4-1 through 4-11.
LESSON OBJECTIVES	After completing this lesson, you should be able to:

4-1. Identify the circumstances that bring suspicion of child abuse.

4-2. Identify the different types and signs/ symptoms of child abuse.

4-3. Identify factors that relate to sexual child abuse.

4-4. Identify the behavior of an adult suspected of child abuse.

SUGGESTION After completing the assignment, complete the exercises of this lesson. These exercises will help you to achieve the lesson objectives.

LESSON 4

CHILD ABUSE

4-1. INTRODUCTION

As a society, we like to believe that almost all families are wholesome, healthy, and caring. Television and newspaper stories about children who have been abused and even murdered must be isolated acts, we think, done by deranged or mentally defective people. Most of us want to believe that our family unit will provide each of its members with love, security, and comfort. Unfortunately, too often the family is a place of pain, injury, and instability. Any family member is liable to be or become a victim of abuse, but children are perhaps the least able to protect themselves or understand why the abuse is taking place.

a. **The Problem.** Since family members protect themselves and each other, the violence in a family unit is often downplayed, covered up, or ignored. It is estimated that there are actually many more cases of child abuse, a major form of family violence, than are reported. The following statistics of reported cases indicate the magnitude of the problem:

(1) There are an estimated 500,000 to 1,000,000 cases of child abuse reported every year in the United States.

(2) Up to 5,000 children die every year as a result of injury or neglect by their parents. Three out of five reported deaths are children under two years old.

(3) Up to 6,000 children are permanently brain-damaged each year as a result of child abuse.

(4) 60,000 children are reported to be the victims of sexual abuse every year. It is estimated that a more accurate figure would be nearly 500,000 children abused sexually each year.

(5) Researchers disagree on the number of victims of child abuse. Some social researchers estimate that over 1.5 million children are kicked, punched, or bitten by their parents every year, and another 750,000 children may be beaten annually. Remember, even these numbers may be too small. Surveys conducted depend on self-reporting, and how many parents did not admit to abusing their children?

b. **History of Child Abuse.** Child abuse is a problem that is centuries old. This problem is not just characteristic of the twentieth century. As early as 1884, Great Britain founded the National Society for the Prevention of Cruelty to Children in an effort to protect children from cruel treatment. Similar societies were founded in other countries. The first state in the United States to legislate protection for children was New York with a law protecting children passed in the late 1800s. Through the years other states passed such laws. In the early 1960s, child abuse was identified as an observable, clinical condition which could be a serious threat to a child's life. Child abuse was given the medical name battered child syndrome. Today the term most commonly used is child abuse. In 1962, the federal Children's Bureau prepared a law detailing how to report child abuse. By 1970, all 50 states, the District of Columbia, Puerto Rico, and the Virgin Islands had their own laws for reporting child abuse. In 1974, Congress established the National Center on Child Abuse and Neglect. Gradually the problem has been identified and legislation enacted for dealing with child abuse. Today, there are resources available for children and families who need help. The task now is to work on the problem of preventing child abuse.

4-2. DEFINITIONS

A problem in reporting and studying child abuse is that there are many definitions of terms rather than standardization of terms. The Federal Child Abuse Prevention and Treatment Act defines child abuse and neglect as "the physical or mental injury, sexual abuse or exploitation, negligent treatment, or maltreatment of a child under the age of eighteen, by a person who is responsible for the child's welfare, under circumstances which indicate that the child's health or welfare is harmed or threatened thereby." A general working definition for child abuse might be this. Child abuse is a nonaccidental injury or pattern of injuries to a child, injuries for which there is no reasonable explanation. The word "injuries" includes nonaccidental physical injury, neglect, emotional abuse, and sexual molestation. These definitions will be helpful in understanding the problem of child abuse.

NOTE: Parents are the most frequent child abusers. Other caretakers (parent's friends, relatives, day care workers) may also be child abusers.

a. **Physical Abuse.** Physical abuse includes severe beating, burning, shaking, human biting, and strangulation.

b. **Neglect.** Neglect refers to failure to provide a child with the basic necessities of life such as food, clothing, shelter, and medical care.

c. **Emotional Abuse.** Emotional abuse includes excessive, aggressive, or other parental behavior that places unreasonable demands on a child to perform more than he is capable of doing. Examples of such abuse include belittling or verbal attacks; lack of love, support, or guidance; constant, excessive teaching.

d. **Sexual Abuse.** Exploitation of a child for the sexual gratification of an adult defines sexual abuse. Examples of sexual abuse include rape, incest, fondling of a child's genitals by an adult, and exhibitionism (a compulsion to show the genitals).

4-3. MYTHS ABOUT CHILD ABUSE

There are a number of commonly held beliefs about child abuse which researchers are finding to be untrue. Here are a few such beliefs:

a. **MYTH:** Parents who abuse their children do not love their children. These parents want to hurt or get rid of their children.

FACT: Most parents who abuse their children really do love the children and feel very guilty after abusing the children. The problem is that these parents do not know how to raise and discipline children in a nonabusive manner.

b. **MYTH:** Abused children hate their parents and want to get away from the parents.

FACT: Most abused children still love their parents. Additionally, even a bad home is more secure than no home. Children will often lie about family violence to protect the parents and keep their home secure and intact.

c. **MYTH:** Remove a child from the parents who abuse him, and you have solved the problem for the parent and the child.

FACT: It may be necessary to remove a child from his parents in time of crisis, but permanent separation harms both the child and the parents. Both then believe that they have been separated because they are no good.

d. **MYTH:** Harsh jail sentences for parents who abuse their children would keep parents from abusing their children.

FACT: Most prosecutors, counselors, and child abuse experts believe that jailing an abusive parent does not solve the problem. Society is satisfied that the abusive parent has been punished, but that parent has not learned in jail how to deal with stress or work through his personal problems that triggered the child abuse.

e. **MYTH:** Parents who abuse their children are crazy people who have serious mental illnesses.

FACT: Studies indicate that less than one in ten abusing parents is mentally ill.

f. **MYTH:** Abusing parents do not change. Once an abusing parent, always an abusing parent.

FACT: Studies indicate four out of five abusing parents can learn new ways of dealing with their children and can stop abusing the children.

g. **MYTH:** The abusive parent is more likely to be the father.

FACT: According to research, mothers are more likely to abuse their children, and sons are more likely to be abused.

h. **MYTH:** Only poor people abuse their children. Poor people especially beat their children.

FACT: Child abuse takes place in all segments of American society regardless of the parents' wealth, education, race, ethnic heritage, or religious faith.

i. **MYTH:** Since abused children know what it is like to be hurt by a parent, these children rarely abuse their own children when they become parents.

FACT: Unfortunately, just the opposite is true. It is estimated that from one out of two to nine out of ten abused children become abusing parents. The abused child learns from his parents and brings his family's habits with him when he has children of his own.

4-4. PROFILE OF THE ABUSED CHILD

Parents or others who care for the child are the abusers in more than 80 percent of the cases of neglect and abuse which result in physical or developmental trauma. As mentioned before, parents themselves are most often the ones who have abused a child. Social scientists are not really sure why parents in some circumstances abuse their children while other parents in the same circumstances do not resort to child abuse. Recent studies reveal these findings about the abused child, the abusive parent, and the family unit itself.

a. **The Abused Child.**

(1) Age. The abused child is usually under 4 years of age.

(2) Handicapped, retarded, hyperactive, or birth defects. A child with any of these problems will add stress to the family's daily life, stress the parents may not be able to handle. Parents of such children may also be disappointed and feel guilty, resentful, and angry that the child is not normal.

(3) Premature birth or neonatal separation. Premature babies, being smaller at birth, needing to be fed more often, and sleeping shorter periods of time, also place stress on a family unit. Some parents cannot cope with that stress. Also, if a newborn baby, premature or not, must stay in the hospital for a period of time after birth to overcome physical problems, proper bonding between the baby and the parents may not take place.

b. **The Abusive Parent.** As social scientists are not sure how many children are abused, these researchers are not exactly sure why some parents are child abusers. The following characteristics, however, have been identified in parents who abuse their children:

(1) Low self-esteem. A parent who is insecure himself may build his self-esteem by abusing his children. He can control his own children through abuse, but he may not be able to control his boss or others with whom he comes in contact in everyday life.

(2) Unhappy, depressed, and/or frustrated. The parent with any or all of these feelings often feels guilty about the past and self-hatred for the way his life is going in the present. Believing himself to be useless, no good, and unlovable, this parent sees his child as useless, unlovable, etc. He takes out his own feelings of worthlessness by abusing his children.

(3) Substance abuser. Parents who misuse alcohol or drugs have a limited ability to deal with their children.

(4) Violent temper. Parents who do not control a violent temper often direct that violence at their children. Also, parents who are violent with each other are usually violent toward their children.

(5) Abused child, himself. Parents who were mistreated as children frequently abuse their own children.

(6) History of mental illness or criminal activity. Although not all child abusers are mentally ill, those who are mentally ill do sometimes abuse their children. Individuals engaged in criminal activity may have been abused as children themselves. Additionally, the force of laws against child abuse is no deterrent to the child abuser who is involved in criminal activity.

(7) Rigid/unrealistic expectations of the child. Some parents expect children to behave perfectly at all times. Toilet training accidents, for example, frequently trigger child abuse incidents.

(8) Young/immature parent. There is no specific training for parenthood. Very young, immature parents do not always understand that caring for a child is a 24 hour a day, 20 year task. The frustration of constant child care can lead to child abuse.

c. **The Family Unit.** Characteristics of the family unit of an abused child include some of the following:

(1) Money problems, often including unemployment.

(2) Adult family members who are isolated with very few friends.

(3) Family which moves frequently, living in many different places.

(4) Marital problems.

(5) Pattern of husband or wife abuse in the family.

(6) Poor parent-child relationships.

(7) Unwanted pregnancies, illegitimate children, youthful marriage.

d. **Situations Triggering Child Abuse.** Usually, something triggers an incident of child abuse. Situations which bring about child abuse include the following:

(1) A family argument.

(2) A discipline problem.

(3) Substance abuse (alcohol or drugs).

(4) Loss of a job.

(5) Eviction notice.

(6) Illness.

(7) Other stresses to a family member or to the family unit.

NOTE: These profiles of the abusive parent and the abused child's family unit paint a picture of child abuse in only one segment of American society (the lower end of the socioeconomic structure). Remember that child abuse occurs in all parts of society in the United States. The abuser may be rich or poor, educated or uneducated, socially prominent or virtually unknown in a town, immaculately dressed in the latest style or slovenly and dirty, etc. People are very good at concealing what they really do and how they really act from outsiders. It is, therefore, doubly important that you as a health care provider be observant and thorough in examining an injured child and that you report to the proper authorities according to local standing operating procedure (SOP) any suspicions of child abuse.

4-5. BEHAVIOR OF ADULT SUSPECTED OF CHILD ABUSE

No single sign is proof of child abuse or mistreatment. It is a pattern of repeated suspicious injuries that is strong evidence of child abuse. Behavior of parents who bring a child to a medical facility for treatment may alert you that a problem exists. The following are indicators that parents are abusing their children:

a. Parent is abnormally nervous.

b. Parent is reluctant to volunteer information or gives contradictory information. When children hurt themselves, the parents can usually provide a large number of details about what happened and how it happened. A parent who keeps changing the story of how the child was injured may be trying to cover up child abuse. Accidents happen in every family. What is important to know is that it was an accident.

c. Parent is hostile toward the child.

d. Parent blames others for the child's injury; for example, the babysitter, a neighbor, or other children in the family.

e. Parent shows too much concern for what appears to be a minor injury.

f. Parent shows no concern and seems disinterested or unaware of the child's condition. The parent is more concerned with himself than the injured child.

g. Parent refuses to hospitalize the child.

h. The story told by the parents does not seem a logical explanation for the particular injuries the child has.

i. The child was injured several days earlier. Parents who do not abuse their children seek medical care immediately when a child is injured. Abusive parents, on the other hand, often delay treatment, pretending the event did not happen or that the injury is not serious and will take care of itself.

j. The injured child has been seen at several different medical treatment facilities recently for injuries. Abusive parents take an often injured child to different doctors or hospital emergency rooms, hoping to avoid detection of child abuse.

4-6. CIRCUMSTANCES THAT AROUSE SUSPICION OF CHILD ABUSE

Physical findings, patient history, laboratory data, and your observations of the child may indicate that the child has been abused.

a. **Physical Findings.** Look for the following:

(1) Multiple fractures of the extremities. Fractures of the arms and/or legs in different stages of healing usually indicate that the child has been abused. A radionuclide bone scan should be done to detect recent fractures.

(2) Multiple bruises and abrasions. Look especially around the child's trunk and buttocks. Be particularly suspicious if there are old bruises in addition to fresh ones. Also, check the child's head and face because 50 percent of physical child abuse injuries are to the head and face.

(3) Multiple soft tissue injuries. A child who has had a bottle forced into its mouth will have multiple soft tissue injuries around the mouth. There will be bruises around the child's mouth.

(4) Burns. Look for the round circles made by cigarette burns. Hot water poured on infants will cause scald burns.

b. **Child's Medical History.** A child who has been in several emergency rooms recently for related complaints may be a victim of abuse. In a military hospital, check the child's medical records. Additionally, a child brought in for treatment of an injury which occurred several days ago may have been abused.

c. **Laboratory Reports for the Child.** A complete physical examination containing laboratory tests and reports will sometimes provide the first medical evidence that an unreported injury has occurred to the child in the past. For instance, if you suspect that a child under 3 years of age has been abused, a nuclear scan of the child's bones may be revealing. X-ray films may not reveal recent injuries which have begun to heal. A nuclear scan of the child's bone structure will show such injuries. CT scans are usually taken for children with head injuries. Conventional X-ray films should also be taken of the head because CT scans may miss skull fractures.

d. **Your Observations.** Observe the child carefully. The person who brings in a physically abused child rarely gives a clear and honest explanation of the acts that produced the injury. Additionally, the adult who brings the child in may have either waited several days or taken the child to other medical facilities for treatment. Since what you are told about how the injury happened may not be correct and since the injury may not have just occurred, it is very important for you to observe the child. Your detection of the nature of the child's injuries is vital in starting proper treatment.

4-7. TYPES OF CHILD ABUSE

Child abuse can be divided into several categories. In this lesson, the types of child abuse are physical abuse, neglect and emotional abuse, and sexual abuse.

a. **Physical Abuse.**

(1) Definition. Physical abuse to a child can be defined as nonaccidental injury to a child. Such abuse is usually inflicted by someone taking care of the child (parent or other caretaker), not by a total stranger. The abuse can be triggered by an angry attempt on the adult's part to punish the child for misbehavior. Or, the physical abuse can be the result of furious adult lashing out at a child who just happens to be around when the adult has some crisis. The physical abuse may be mild (a few bruises, welts, scratches, cuts, scars), moderate (numerous bruises, minor burns, a single fracture), or severe (large burn, central nervous system injury, abdominal injury, multiple fractures, other life-threatening injury). All of these forms of physical child abuse (even mild abuse) are unnecessary and damaging to the child.

(2) Signs and symptoms of physical child abuse. Included are the following:

(a) Bruises. Typical bruises are caused by a forceful slap on the face, upper arms, or buttocks.

(b) Distinctive marks. Rectangular, linear, or round marks which might have been caused by blunt instruments are common. Choke marks on the neck may be evident. There may be circumferential bruises from restraints on the ankles or wrists as well as bruises at the corners of the mouth from gags.

(c) Human bite marks. Human bite marks may be found on any part of the child's body but are most frequently found on the cheeks and arms. A physically abused child may have healed, healing, and/or fresh bite marks.

(d) Burn injuries. Cigarette burns on hands, feet, or buttocks indicate physical abuse. Burn injuries may be in the shape of a household appliance such as an iron, or burn injuries may be the result of scalding from boiling liquid poured on the child.

(e) Facial injuries. There may be trauma to the eyes, ears, nose, or mouth.

(f) Bald patches. Bald patches on the child's scalp interspersed with normal hair growth often indicate physical abuse.

(g) Chest injuries. A radiological bone survey can reveal unusual fractures of the ribs, lateral clavicle, scapula, and sternum. Such fractures should arouse suspicion of child abuse.

(h) Abdominal injuries. Physical findings of abdominal injuries include ruptured liver, spleen, or pancreas as well as intramural hematoma of the bowel. Children with these injuries may have recurrent vomiting, abdominal distention, absent bowel sounds, local tenderness, or shock. A ruptured liver or spleen is the most common finding. Intramural hematomas can occur at the sites of ligmental support such as the duodenum and the proximal jejunum. Intramural hematomas are caused by the whipping force of a punch or blow. This injury is different from a ruptured spleen or ruptured kidney injury, both of which can be caused by the crushing or compressing forces of a traffic accident or a fall. Adults with a child who has an intramural hematoma routinely deny that the child has had a blow to the abdomen. Therefore, in any case in which a child has sustained an abdominal injury without a reasonable explanation, the medical examiner should suspect child abuse.

b. **Neglect and Emotional Abuse.**

(1) Definition. Neglect involves failure to provide the necessities of life for a child. There are many types of neglect: medical, educational, nutritional, psychosocial, physical, and emotional neglect. Abandonment is also classified as a form of neglect. The child who is under weight and malnourished may be a victim of nutritional neglect. Children under two years old are most frequent sufferers from this type of neglect because they are still dependent on adults for food and because the first two years are the years of most rapid growth. Medical (or health care) neglect exists when a child with a treatable chronic disease does not receive medical treatment despite recommendations to the parents or caretakers. Physical neglect occurs when those responsible for caring for the child don't take care of him. Included in physical neglect are dirty hair, dirty or inadequate clothing, incomplete immunizations, unsanitary home environments, unstimulating environments, inadequate after school supervision, and excessive work. Such children should also be evaluated for the presence or absence of severe emotional disturbances. Often, their parents are very depressed and withdrawn. The failure to thrive syndrome (FTT) is part of this type of child abuse. All of these forms of neglect have an emotionally damaging impact on the child.

(2) Signs and symptoms of neglect and emotional abuse. Included are the following:

(a) Stage of development less than other children of the same age.

(b) Evidence of various problems in learning.

(c) Frequently very depressed.

(d) Fearful.

(e) Aggressive behavior.

(f) Socially withdrawn.

(g) Sometimes behaves in more adult manner than other children of the same age.

c. **Sexual Abuse of a Child.**

(1) Definition. Any sexual activity between an adult and a child (child = a person under the age of 18) is defined as sexual abuse. Types of sexual abuse of a child include rape (rape of a child, formerly called statutory rape, = sexual intercourse with a girl, not the offender's wife, under the age of consent), incest, indecent assault, child pornography, and child prostitution. Included are child molestation (fondling or masturbation of the child by another person), intercourse (vaginal, anal, or oral intercourse even though not forced on the child), and family-related rape. Usually, the child victim is a girl (in 90 percent of the cases), and half of these child victims are under the age of 12. The person committing the abuse is male 99 percent of the time.

(2) Signs and symptoms of sexual abuse. Included are the following:

(a) Lacerations, bruises, or injuries to the genitals, injuries that cannot be explained logically as accidental.

(b) Venereal disease.

(c) Poor sphincter tone.

(3) Reasons victims of sexual abuse participate in the abuse. A variety of factors are responsible for the sexually molested victim to cooperate. Included are the following:

(a) Rewards or bribes may be used to encourage the victim to go along. The offender may treat the abuse as a game, little by little encouraging the victim to engage in sexual play.

(b) The offender may use fear. While force and violence are not usually used directly, the offender may tell the child he will hurt other family members if the child does not cooperate.

(c) The offender may place blame on the victim. Many adults blame the child for not resisting the abuser. Remember, children are taught early in life to obey adults and to do as adults tell them. Particularly among children under 13, sexual activity is beyond their understanding and far beyond the child's capacity for moral judgment. The adult offender is totally responsible, but the child may bear life-long guilt feelings that he is a "bad" person. The adult abuser often encourages such feelings.

(d) Many victims believe that others know what is going on. He (the victim) may even think that he is sending signals inviting the abuse. When sexual advances are made by strangers, the victims often believe more strongly and incorrectly that they have brought the abuse on themselves.

(e) A different kind of fear is present if the offender is a member of the victim's family. The victim sometimes is afraid that telling about the abuse will disrupt or destroy his family, and the child cares about his family very much.

(f) The sexually abused child may not realize that anything is wrong if the abuse is committed by someone the child loves and trusts.

(g) The victim may believe that ending the sexual activity will mean the loss of the love of the abuser.

(h) Sometimes victims think no one will believe them and so do not tell anyone.

(i) Victims may feel that sex is bad and be too ashamed and guilty to tell anybody about what has happened.

4-8. MANAGEMENT OF THE ABUSED CHILD

Your first concern when treating an abused child is to be sure all life-threatening injuries are treated first. Check the child's airway, breathing, and circulation. Treat, if necessary.

a. **Identification Procedures.** Begin with identification procedures.

(1) Patient history. Obtain this information from the parent or child, depending on the age and physical condition of the child.

(a) What is the patient's general health? Good? Fair? Poor?

(b) Which childhood illnesses has the child had? Ask about measles, mumps, whooping cough, chickenpox, smallpox, scarlet fever, acute rheumatic fever, diphtheria, poliomyelitis.

(c) Has the child had any other major illnesses?

(d) Has the child been admitted to a hospital for any problem that did not require surgery?

(e) What immunizations has the child had? Ask about polio, diphtheria, pertussis, and tetanus toxoid, influenza, cholera, typhus, typhoid, last PPO or other skin tests. Ask if the patient had any unusual reactions to immunizations.

(f) Has the child had any surgery? If so, ask the dates, hospital, diagnosis, and complications of the surgery.

(g) Has the child had any broken bones or other physical trauma such as blunt instrument trauma? (You are asking about serious injuries.)

(h) Is the child taking any medications? Ask about current or recently taken medications. Ask about the dosage for either a home remedy or prescribed medication.

(i) Does the child have any allergies? Ask about allergies to medications, environmental allergens, and foods.

(j) Has the child ever had a transfusion? If so, ask about his reactions, the date, and the number of units transfused.

(2) Physical examination. Examine the child thoroughly from head to toe.

(a) Search for lacerations, abrasions, trauma, and evidence of internal injury while you are performing a regular physical examination.

(b) Perform your physical examination normally. Do NOT voice your suspicions of child abuse or confront the parents.

(c) Note all evidence or findings in writing.

CAUTION: Keep all suspicions to yourself. It is NOT the medic's responsibility to confront the parents with the charge of child abuse.

b. **Treatment.** Treat the child for all injuries as appropriate.

c. **Report.** Prepare a report for the medical staff.

(1) Record your observations about the child's injury. Omit writing or speaking about child abuse or a battered child in your report. Use the initials N.A.T. (nonaccidental trauma) or the initials S.C.A.N. (suspected child abuse and neglect).

(2) Record your observations at the scene of the injury (if you are not in a medical treatment facility). If you are in the victim's home, describe the condition of the home specifically. List any objects that were used to hurt the child, objects such as belts or straps.

(3) Transport the child to a medical treatment facility.

CAUTION: DO NOT confront the parents with your suspicions of child abuse. Your responsibility is to treat the child and get the child to a medical treatment facility.

4-9. THE SEXUALLY MOLESTED CHILD

a. **Situation Management.** Management of this situation requires a great deal of tact. The parents are usually upset with everybody, including health care personnel. The child will also be upset and frightened. If the offender is outside the family, the child may have tried to tell the parents of the abuse. If the offender is inside the family, the child may have tried to tell a family member. In either case, the parents (or other family members) will be very anxious, and you need to reassure parents (or other family members) as well as the child.

b. **Role of the Medical NCO.** Follow these procedures.

(1) Be calm and understanding. Reassure the parents (or other family members) and the child.

(2) Develop a complete report. Follow local standing operating procedure (SOP) and local advocacy policy. Have the child describe the attacker as completely as possible if the person is not a family member or a friend. You may have the child describe the nature of the attack. Use dolls and drawings as methods of gathering this information from the child. Objective evidence must be gathered such as samples from the vagina, pubic hair, etc. The examining physician will collect these samples from the patient. Be sure any other evidence at the scene is protected.

(3) Conduct a primary assessment. Examine the child to determine whether there are injuries which must be treated immediately.

(4) Do a rapid secondary assessment. Perform a more thorough examination of the child to find what other injuries the child has sustained.

(5) Treat only those injuries which require immediate attention before transporting the patient to a medical treatment facility.

4-10. PREVENTION OF CHILD ABUSE

Child abuse is a complex problem, and American society must deal with preventing the problem. Reacting to the problem of child abuse after it occurs is costly in terms of human suffering and dollars. Today, there are many individual instances of effort to prevent child abuse and many child abuse prevention programs. A common factor in many of these programs has been to identify situations or circumstances in which abuse is likely to occur.

a. **Programs/Groups for Prevention.** New groups and programs are being formed. Listed below are some child abuse prevention groups and programs now in existence.

(1) Parent-aides. Parent-aides are individuals trained to work with troubled parents. The aides listen to parents who are troubled by the stresses of life (caring for children being one of those stresses). These aides help the parents learn to deal with the stress of caring for and nurturing a child. The troubled parents are also taught that there are other ways of solving their own problems, means other than abusing their children.

(2) Parents Anonymous (PA). Parents Anonymous is a national group with more than 600 chapters. This self-help group provides these services: support network for abusive parents, an organization for socialization for such parents, and a wide range of information about parenting. The nature of PA groups is different from chapter to chapter, depending on the individuals who make up the group. On the whole, a Parents Anonymous chapter helps abusive parents understand their problem by seeing the same problem and behaviors in others. This group approach can help an abusive parent change his own attitude and treatment of his child.

(3) Public education and awareness programs. Local school systems, social agencies, church groups, etc. can and have initiated programs for the general public that seek to give knowledge about child rearing. These programs give resources for parents to use when they start to abuse their children. Many high schools and colleges offer classes on how to be a parent. Such programs are relatively inexpensive and very beneficial in preventing child abuse.

(4) Observation of parent-infant interactions. Studies have shown that observing mothers and infants can indicate whether the infant will be physically abused or neglected. Primary care physicians and other health care personnel can observe the way mothers treat their infants, develop skill in making these observations, and subsequently find help for those parents who seem to lean toward child abuse.

(5) "Immunization" of children against abuse. There have been programs in recent years which try to teach children how to react to one form of abuse--sexual abuse. Such programs have been presented to very young children in school settings. The goals are to define sexual abuse for the child and teach the child what to do if someone tries to abuse him.

b. **Common Sense Rules for Children.** Teach children how to protect themselves against sexual abuse. Children who are old enough to understand can be taught these common sense rules.

(1) Be alert. Tell children to be aware of the behavior of other people and to be careful. Children should remember:

(a) Don't believe strangers who tell the child they were sent by the child's father or mother to pick the child up.

(b) Avoid being alone with any person who wants to touch the child in a sexual way.

(c) Don't be too trusting. Avoid contacts with strangers or other adults who seem suspiciously friendly: don't accept gifts, don't let anyone touch him, don't let a strange adult join in play.

(2) Avoid dangerous situations. Tell children how to avoid letting others take advantage of them.

(a) Don't play alone in deserted areas or use public restrooms along.

(b) Don't open the door at all when you are home alone.

(c) Don't talk to people you don't know on the telephone.

(3) Discuss problem encounters with parents. Request that your children tell you if anything like the following occurs:

(a) Any unusual or suspicious sexual behavior the child has seen or experienced.

(b) If a friend leaves with someone whose behavior seems suspicious.

(c) If the child feels uncomfortable about being alone with someone.

(4) What to do if the child is approached or abused. A child should be taught not to obey an abuser, unless the abuser threatens the child physically. Instead, the child should:

(a) Try to run away if someone tries to abuse the child sexually.

(b) Say NO if anyone tries to abuse the child sexually.

(c) Tell the abuser that he (the child) will tell someone.

(d) Find help from someone.

(e) Tell an adult what has happened as soon as possible.

(f) Remember when and where the incident happened.

(g) Understand that he (the child) is NOT guilty if abused; the incident was NOT the child's fault.

4-11. CLOSING STATEMENT

In peacetime, you may be assigned to a medical treatment facility where dependent children are treated. In time of war, you could be required to treat the children of an indigenous population. The ailments may vary, but all children have similar needs and responses to medical personnel. Use the information presented in this lesson to good advantage.

Continue with Exercises

EXERCISES, LESSON 4

INSTRUCTIONS. Complete the following exercises by writing the answer in the space provided. After you have completed all the exercises, turn to the solutions at the end of the lesson and check your answers.

1. List two physical findings that indicate the child you are examining might have been abused.

   a. _____.

   b. _____.

2. Define physical child abuse. _____

   _____

3. List three signs/symptoms of physical child abuse.

   a. _____.

   b. _____.

   c. _____.

4. List four neglectful types of child abuse.

   a. _____.

   b. _____.

   c. _____.

   d. _____.

5. Define sexual abuse of a child. _____

   _____

6. List four signs/symptoms of neglect/emotional child abuse.

   a. _____.

   b. _____.

   c. _____.

   d. _____.

7. List two signs/symptoms of sexual abuse of a child.

   a. _____.

   b. _____.

8. Adults who have abused the child they have brought in for treatment often exhibit some telling characteristics. List three such characteristics which should arouse your suspicions of child abuse.

   a. _____.

   b. _____.

   c. _____.

9. When you are recording your observations about the injuries of a child whom you suspect of having been abused, use the initials N.A.T. which stand for _____ _____and the initials S.C.A.N. which mean _____ _____.

10. As you examine a child whom you believe has been abused and as you record your observations, remember not to confront the parents with your suspicions because _____ _____.

Check Your Answers on Next Page

SOLUTIONS TO EXERCISES, LESSON 4

1. You are correct if you listed any two of the following:

   Multiple fractures of the extremities.
   Multiple bruises and abrasions.
   Multiple soft tissue injuries.
   Burns. (paras 4-3a(1) through (4))

2. Physical child abuse is nonaccidental injury to a child. (para 4-4a(1))

3. You are correct if you listed any three of the following:

   Bruises.
   Distinctive marks such as choke marks on the neck, round marks which could have been caused by a blunt instrument, etc.
   Human bite marks.
   Burn injuries.
   Facial injuries.
   Bald patches.
   Chest injuries.
   Abdominal injuries. (paras 4-4a(2)(a) through (h))

4. You are correct if you listed any four of the following:

   Medical neglect.
   Educational neglect.
   Nutritional neglect.
   Psychosocial neglect.
   Physical neglect.
   Emotional neglect.
   Abandonment. (paras 4-2b, 4-4b(1))

5. Sexual abuse of a child is defined as any sexual activity between an adult and a child (child = anyone under the age of 18). (para 4-4c(1))

6. You are correct if you listed any four of the following:

   Lower stage of development than other children of same age.
   Has various learning problem.
   Frequently very depressed.
   Fearful.
   Behaves aggressively.
   Withdraws socially.
   More grownup acting than other children sometimes.
   (para 4-4b(2)(a) through (g))

7. You are correct if you listed any two of the following:

   Lacerations, bruises, or injuries to the genitals which could not have been caused by accident.
   Venereal disease.
   Poor sphincter tone.
   Tears and infected lesions around the mouth or anus.
   (paras 4-4c(2)(a) through (d))

8. You are correct if you listed any three of the following:

   Nervousness.
   Reluctance to give information or contradictory information.
   Hostility toward the child.
   Blaming others for the child's injury.
   Too much concern for what appears to be a minor injury.
   Lack of concern about the child's injuries.
   Refusal to hospitalize a child who needs to be hospitalized.
   Explanations for the child's injuries unlikely or very suspicious.
   (paras 4-5a through h)

9. Nonaccidental trauma.
   Suspected child abuse and neglect. (para 4-6c(1))

10. Confronting the parents is NOT your responsibility. (para 4-6a(2)(b))

End of Lesson 4