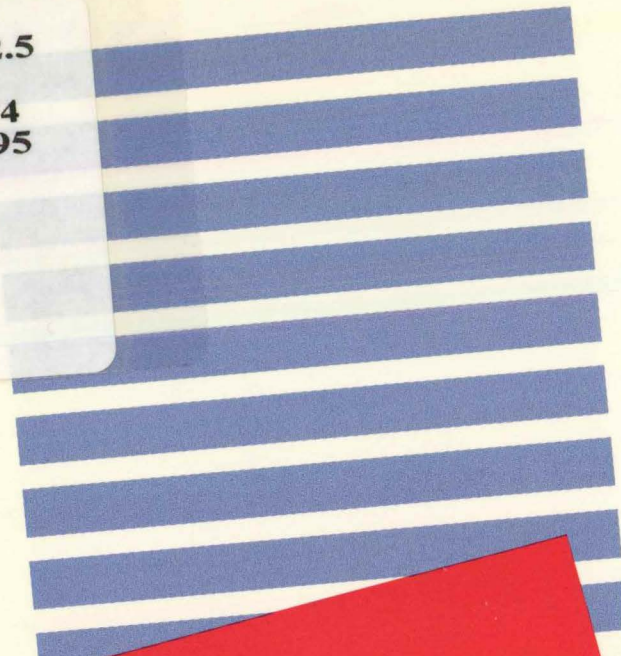


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Adolescence

A CONTINUUM

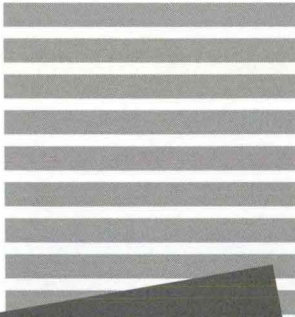
FROM CHILDHOOD

TO ADULTHOOD

Third Edition

Terry E. Branstad
Governor

Christopher G. Atchison
Iowa Department of Public Health



Adolescence
A CONTINUUM
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TO ADULTHOOD
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FOREWORD

Adolescent health has been an integral part of Iowa Department of Public Health activities for many years. Presently, we have two successful adolescent health demonstration projects that are in their sixth year of funding. The department is involved with the development of School Based Youth Services Programs (SBYSPs) with special emphasis on the primary health care component. *Adolescence: A Continuum from Childhood to Adulthood* is intended to be a resource on adolescence for health care providers and others who work with Iowa's youth. Our objectives are to:

- Increase understanding of the range of normal growth and development and its relationship to behavior in adolescence;
- Improve assessment, communication, and understanding of adolescents and their families; and
- Provide strategies for intervention to promote the health of adolescents.

The department has been fortunate to retain Donald E. Greydanus, M.D., a noted adolescent specialist, and his associate Helen D. Pratt, Ph. D., in preparation of the third edition of *Adolescence: A Continuum from Childhood to Adulthood*.

Sincerely,



Christopher G. Atchison, Director
Iowa Department of Public Health

INTRODUCTION

Adolescence is the critical process in which the individual leaves the dependency of childhood and enters a period in which dramatic changes occur, eventually resulting in what society calls adulthood. It is a complex developmental time which involves sociological, psychological and physiological issues. It is a unique bridge which accepts the achievements of childhood and sets in motion the changes necessary to establish adulthood.

Since the goal of this period is to develop an adult who is autonomous and capable of functioning at intellectual, sexual and vocational levels which are acceptable to society, anyone interested in children or adults should be interested in adolescents. Everyone has a stake in adolescents, for they have profoundly affected our past, continue to affect our present, and will continue to affect our future.

The adolescent or teenager has historically been seen in different, but more often than not, negative perspectives by various individuals (Greydanus, 1982). In the 8th Century B.C., the Greek poet, Hesiod notes:

I see no hope for the future of our people if they are dependent on the frivolous youth of today, for certainly all youth are reckless beyond words.... When I was a boy, we were exceedingly wise and impatient of restraint.

Aristotle was especially concerned with youth's development of sexuality:

The young are in character prone to desire and ready to carry any desire they may have into action. Of bodily desires it is the sexual to which they are most disposed to give way and in regard to sexual desire they exercise no restraint.

Shakespeare also remained pessimistic about youth. In *A Winter's Tale*, he said:

I would that there were no age between ten and three and twenty or that youth would simply sleep out the rest; for there is nothing in the between but getting wenches with child, wronging the ancestry, stealing and fighting.

More recent scholars have not emphasized the dangers of adolescence but do clearly establish the importance this phase has for youth. Landis (1945) calls it a time of transfer from the independent, irresponsible age of childhood to the self-reliant, responsible age of adulthood. Erickson (1963) defines adolescence as a period of rapid changes — physical, physiological, psychological and social; a time when all sameness and continuity relied on earlier, are more or less questioned again. Piaget (1969) calls adolescence an age of great ideals and the beginning of theories, as well as the time of simple present adaptation to reality.

Blos (1962), a psychoanalyst, calls adolescence the terminal stage of the fourth phase of psychosexual development, the genital phase (after oral, anal and latency),

...which has been intercepted by the latency period.... Adolescence denotes the psychological prothesis of adaptation to the condition of pubescence; it is the sum total of all attempts at adjustment to the stage of adolescence.

Finally, Eisenberg (1969) defines adolescence in a manner reflective of how this manual views this important process:

It is the critical period of human development manifested at biological, psychological and social levels of interaction; of valuable onset and duration, but marking the end of childhood and setting the foundation for maturity.

Before proceeding to review some of the medical and behavioral problems of the American teenager in the 1990s, it is necessary to present a basic review of the various developmental stages that sojourners of this time period must encounter.

Youth go through psychosocial, cognitive, pubertal and sexual stages while traversing this often unpredictable road from childhood to adulthood. It is the premise of this manual that understanding these stages is essential for any health care professional who seeks to effectively work with youth. Thus, a painting or portrait of the adolescent will now be given in which the first brush stroke is a description of the youth as a psychosocial being; the second brush stroke identifies the youth as a cognitive individual; and

Probably no issue is more sensitive to youth and parents than the concept of friendships. Peers become very influential in their lives and the type of friends they develop says much about the youth. As adolescents leave their parents, peers are used to fill this void and help them develop a sense of self-worth. The choice of friends is a critical one, for peers who choose negative coping skills encourage the individual along similar negative lines. Parents are correctly worried if their child picks negative peers — for this implies the child has a similar self-image and may become influenced to develop or worsen poor behavioral patterns. Heterosexual experimentation (as discussed later) is also a key element of mid-adolescence. If a youth is into negative behavior, pregnancy and sexually transmitted diseases may unfortunately result. Such actions, along with challenged moral, societal and parental rules, often leave many parents concluding that they have lost control of their son or daughter.

Again, it is important to remember that variations on such themes do occur. Some mid-adolescents exhibit minimal outward difficulty, while others present with major difficulties during mid-adolescence. A key element is that the psychological aspects of mid-adolescence occur during an appropriate time — preferably between ages 14 to 18. For someone to spend a “quiet” adolescence and then to evidence the major eruption characteristics of mid-adolescence when in late adolescence or adulthood may be chronologically expected, but can be even more distressing to parents and society. Also, though parents may feel they have lost control, this is usually not the case.

Most youth emerge from mid-adolescence with relatively few scars, probably because the ideas they learned during childhood still prevail, even during those times when it appears that peers have the only influence. Thus, how parents treat and teach their youth as children is actually a greater influence than that of peers during adolescence. The individual who enters adolescence with a good self-image and who has been treated consistently well by parents generally has a more tranquil adolescence and better adulthood adjustment than if the opposite were true.

Late adolescence: Late adolescence sooner or later emerges from the unpredictableness of mid-adolescence. Generally, this occurs between ages 18 through 21 when final pubertal fine-tuning occurs, such as regulation of menses in females or further development of muscular strength in males (see Puberty section). The key to

tranquility in this stage is that most of the turbulent issues of mid-adolescence begin to resolve. Parents and youth should be comfortable with the inevitable process of emancipation, in which the youth gives up childhood dependency ties and acquires the autonomous functioning of adulthood. The individual is now more comfortable in going from and returning to the home if still at home, or in leaving for good. Economic necessity and/or expensive vocational (professional) training, which is characteristic of American life in the 1990s, may force the youth to keep closer ties to home than otherwise would be the case.

If parents give up their “child” to adulthood and the youth accepts this, then considerable tranquility usually returns to the home. Parent-youth conflicts resolve and parent-youth relationships take on a special “adult to adult” characteristic. The parent-child bond remains, but now in a very special manner. The youth should now be concentrating on job investment and acquisition of adult sexual roles, which is essentially the purpose of late adolescence and which then allows adulthood to successfully occur (see Table 3). Hopefully, the individual has acquired an appropriate self-image as a moral, sexual and spiritual human being. Some will also continue the altruistic tendency of mid-adolescence. However, such idealism usually becomes tempered by the experience of late adolescence and early adulthood. The “realism” of

**CHARACTERISTICS OF
LATE ADOLESCENCE**

1. **Issues of Emancipation From Parents Are Essentially Resolved**
2. **Final Pubertal Changes (Physiologic Fine Tuning) Occur**
3. **Finalization of Secure, Acceptable Body Image and Gender Role**
4. **Establishment of “Adult” Versus Narcissistic Sexual Relationships**
5. **Acquisition of Adult Lifestyle (See Table 7)**
6. **Considerable Energy Spent in Establishment of Vocational Skills or Training**

Table 3

ERICKSON'S TASKS OF ADOLESCENCE

1. **Emancipation**
2. **Acquisition of Identity (Sense of Uniqueness and of Self Separateness)**
 - a. **Intellectual: "Who am I in relation to the universe?"**
 - b. **Sexual: "Who am I as a male or female in relation to other males and females?"**
 - c. **Functional: "What role do I assume in adult lifestyle and work?"**
3. **Development of Intimacy vs. Isolation**

Table 4

adult life can then set in. Again, it is stressed that the experiences of childhood determine much of the individual's reaction to adolescence and his/her eventual successful or failed adjustment as an adult. Childhood is the template for adolescence which becomes translated into adulthood. As this manual proceeds, various examples of this concept will be presented.

Psychosocial Stages: Summary

When the health care professional is charged with evaluation of an adolescent, the key element is to see how the individual measures up to obtaining the goals which have been presented. Is he or she acting appropriately at a particular stage? Is he or she precocious? Is he or she proceeding through these stages in a normal manner? Don't listen to the age but listen to what psychosocial stage the individual seems to be in; then see if the age matches. Erickson refers to this as the tasks of adolescence (see Table 4).

Goals of adolescence are to allow the "finished" product to emancipate (or leave childhood dependency for adulthood autonomy) and to establish an acceptable identity as an intellectual, sexual and functional being. Variations in this complex process are to be expected. It is not the day-to-day experiences which are important but the overall trend; it takes years to go from early adolescence to mid-adolescence to late adolescence to adulthood. There are many factors affecting this journey. The more health care

professionals understand about this complex process, the more help can be given to parents and youth during this potentially difficult time.

Finally, remember that becoming a young adult is not the final phase of life but the continuation of this process of seeking one's real identity. Thus, adulthood is really a continuation of processes started in childhood, then passed on into adolescence, and eventually merged into various stages of adulthood.

Cognitive Stages of Development

Although cognitive development is a part of psychosocial development, it is important to take a closer look at cognitive development. The adolescent's ability to think and process information significantly impacts emotional, behavioral and social responses to his or her environment. In addition to psychosocial stages, adolescents also go through important stages in maturation of their thinking or cognitive skills, as outlined by Piaget (see Table 5). The adolescent should have developed complex sensory motor skills by age two. Language acquisition, elementary logic, and more sophisticated reasoning skills should have been acquired by age seven. Adolescence does not begin until the end of the Concrete Operational Stage (age 11).

PIAGET'S COGNITIVE STAGES

1. **Sensorimotor Stage (Birth - 2 Years)**
2. **Preoperational Stage (3 - 6 Years)**
3. **Concrete Operational Stage (7 - 11 Years)**
4. **Formal Operational Stage (12 - 16 Years of Age and/or to Adulthood)**

Table 5

Each of Piaget's cognitive stages is presented as a point of reference for health care professionals. Occasionally, an adolescent who has not developed all aspects of a cognitive stage will appear in the professional's office. The ability to identify such developmental deficits can be very useful in designing interventions and tailoring recommendations.

Preoperational Stage: From ages 3 through 6, many enter the Preoperational Stage in which acquisition of language skills becomes a key element. There is an increase in thinking skill but minimal logic is noted and the child is usually unable to utilize reverse thinking skills. For example, the average 5 year old has a difficult time realizing that the larger nickel is worth less than the smaller dime or that an individual who is taller than another is not necessarily older in years. Many individuals at this age struggle with concepts of theology or science such as, Who is God?; Where is heaven?; What is death?; Why can't I see grandmother who has died?; Does God wear clothes?; Why don't the stars fall down?; Where is the sun at night?; and so forth. For example, if death is explained as "falling asleep," then it is not surprising to see 5 year olds upset when given general anesthesia for surgery. It is common for individuals in the preoperational stage to surprise parents with complicated questions and then find that the parents are unable to explain the questioned phenomenon using adult logic.

Children often have a difficult time with language idioms or expressions. If the parent calls home to inform the child that mother/father is "tied-up at the office" and will be home late, the child may become quite alarmed at such a thought. This is usually a delightful stage for parents and any health care professional who has the privilege of caring for, or teaching, such children. It is also a time of great responsibility, for children continue to need consistent warmth and love during this period.

Though children are well-known to rebel and find their limits, parents must respond out of love and use consistent, reasonable discipline. The seeds to many problems of youth and adults stem from abnormal parenting practices at this very important stage of child development. An important job that parents have is to carefully help their children deal with the inevitable frustrations of being in the preoperational stage while seeking to go beyond this level of thinking.

Concrete Operational Stage: Most individuals enter the Concrete Operational Stage from late childhood through early adolescence (ages 7 - 11). However, as often noted in childhood and adolescent development, variations are common, depending on the developmental timing of the particular child. During this time, there is a markedly increased capacity for logical thinking. Parents notice that the growing child understands more and can handle more complicated tasks in school, church (synagogue) and other learning situations. The individual can better understand symmetrical relationships and how to appreciate concepts involving various serializations.

A child learns to enjoy learning and can take pride in increasingly complex educational accomplishments if the child is developing a healthy self-image, if he or she feels secure within a stable home environment, and if the school works with and within individual abilities. Some children develop cognitive skills at rates different from the average, and if their schools or parents do not appreciate this fact, frustration in school tasks occurs which can result in school failure in late childhood or adolescence. Even a difference of a year or two in chronological age can make a marked difference in cognitive skills being equal to or below the class average. A major task of this period is to begin to enjoy learning at a level consistent with personal cognitive abilities. Many parents and schools do not appreciate this concept and when resulting severe school dysfunction emerges, students, parents, teachers, and eventually, society are dismayed.

A major limitation in this stage is noted by the term *concrete* which implies that an individual has considerable difficulty with futuristic thinking. The adolescent's thinking skills are concrete, as if placed in a block of stone, and he or she tends to deal mainly with here and now issues. What is of major importance to the early adolescent is "today," certainly not anything months or years in the future. For example, it is difficult to counsel a 13-year-old youth who smokes cigarettes and is unable to listen to logical discussion about the considerable cigarette-related morbidity and mortality that awaits the chronic smoker in the future. This individual simply does not understand nor appreciate such advice. It is difficult to provide effective contraception to a 12-year-old sexually active girl who really does not understand that pregnancy can result with delivery of a real human being nine months after

conception. Logic with most concrete-thinking youth must be rooted in practical present-day terminology.

Use of futuristic logic may result in the argument being lost. Many youth remain at this level well into mid- or even late adolescence. Thus, dealing with youth necessitates the ability to see “where they’re at” in terms of psychological and cognitive stages, regardless of their specific or stated chronological age.

A final difficulty with young (or older) teenagers who are at the concrete thinking level is their tendency to be “magical thinkers.” This is a concept seen in early- and mid-adolescence, which can cause considerable difficulty for youth, parents and society. It implies that the individual feels unique and that harm will not come to one because they are somehow special and immune to danger. Thus, the young girl can be sexually active, refuse contraceptives and really be personally convinced that, though others may get pregnant, she will escape such a fate. Thus, the teenage boy can drink heavily at a peer’s party, and then drive home with friends — never worrying about a car accident.

The combination of concrete thinking with magical thinking can be a very dangerous combination which justifiably can worry any parent. Youth are inclined to be impulsive and mistakes do indeed occur. Telling a youth with concrete and magical thinking skills not to see a girlfriend or boyfriend with whom they have formed a close relationship may result in an extreme impulsive reaction in some adolescents. They may not appreciate that this interruption of their relationship is not forever or that an impulsive reaction (such as a drug overdose) may be harmful as well as fail to resolve the current problem. Unfortunately, one can expect to make mistakes — the parents’ reaction to such behavior can improve or worsen the entire situation. Parents often forget that they may have overcome their own concrete/magical thinking stages, but their offspring may still be in the middle of such struggles. Often patience and time will allow the youth to move on into the next Piagetian cognitive stage — the Formal Operational Stage.

Formal Operational Stage: Thinking at this stage involves maturation of cognitive skills, in which improvement in inductive and deductive reasoning ability occurs. During this time, the youth combines an ability to

develop theories along with a rich fantasy life. He/she develops propositional logic, in which the individual can think about the thought process itself. Normally, this develops after age 12, starting with early adolescence and finalizing in mid- or even late adolescence. However, as noted, many teenagers and even adults never fully shift cognitive gears from the concrete phase to the formal operational phase. Yet, many youth do enter this improved phase of reasoning ability, just as they reach a point when they want to argue, to disagree with parents, to determine their own views, and set their own course. Thus, such thinking skills mature as the process of emancipation and identity formation races forward.

In fact, mid-adolescence is considerably aided with entrance into formal operational thinking. Also, moral thinking and altruistic concerns now can develop, partly due to this new thinking skill. The individual looks like an adult, wishes to be one, and now “sounds” like one. As an argumentative “machine,” the adolescent may present a formidable challenge to the parents.

Though thinking skills are changing, the individual can still possess magical thinking concepts and still lack a very important element — experience. As noted by Shakespeare in *Antony and Cleopatra*, adolescence represents the “salad days — when one is green in judgment and cold in blood.” Combine this with the need for approval by peers, many of whom are under similar developmental concepts, and one sees the many difficulties mid-adolescents can create for themselves, for parents and for society. Mistakes are not uncommon at this time. Despite warnings, the 16 year old may drink heavily at a party and end up killing himself/herself as well as several peers in a tragic car accident.

Fortunately, most teenagers survive this potentially difficult time and emerge into adulthood seeking vocational skills as well as adult sexual lifestyles. The best way to reduce the potential problems of adolescence, as noted previously, is by careful parental preparation during childhood. Another key is how parents react to their changing offspring and how they accept the inevitable process of change that is marvelously unfolding before them.

SEXUAL DEVELOPMENT OF ADOLESCENCE: ADOLESCENT SEXUALITY

A key component to the healthy development of the teenager is how he/she proceeds with the stages of adolescent sexuality. As noted, adolescence is the critical period of growth from puberty to maturation. During this time, the individual must develop healthy self-esteem and also sexual comfort — learning to deal with those in his/her “sexual” universe. Sexuality is a complex phenomenon which involves interaction between one’s a) biologic sex; b) core gender identity (sense of maleness and femaleness); c) gender identity (sense of masculinity and femininity); and d) gender role behavior (nonsexual as well as sexual). It is also a basic yet profound recognition that humans need other humans and that this human capacity to give and receive love represents a continuum from birth to death. As sexuality develops, the success or failure experienced by the child and teenager has much to do with eventual success or failure as an adult.

Biologic Sex: The biologic sex (XX or XY) is determined at conception, but postnatal sex hormones also have influence on the developing fetus. Between the sixth and twelfth fetal week, androgens program the XY fetus to

develop biologically, and to some extent, behaviorally into a male. The presence of female hormones along with the absence of a critical level of fetal androgens allows the XX fetus to develop into a normal female. Rare situations involving an excess or deficiency of sex hormones can alter the normal male or female outcome; likewise, chromosomal abnormality can cause intersex conditions. However, in nearly all cases the XX or XY fetus is normally programmed, in a poorly understood manner; and the biologic sex is clearly assigned at birth.

Core Gender Identity: Various environmental influences from parents and others teach the individual what is meant by being male or female. Thus, by the age of 2 one’s sense of maleness or femaleness (core gender identity) is normally fixed. Likewise, the sense of what constitutes masculinity or femininity (gender identity) is established in early childhood.

Gender Identity: During early childhood, individuals learn various behaviors associated with masculinity or femininity and then establish what can be called non-sexual gender role behavior. Thus, girls play with dolls and wear dresses; boys do not and normally will not even consider such activities.

FREUD’S PSYCHOSEXUAL STAGES OF DEVELOPMENT

1. **Oral:** Feeding, pleasure derived through the mouth; ages 0 - 1½ years.
2. **Anal:** Toilet training and control over self and environment through elimination functions; ages 1 - 6 years.
3. **Phallic Phase:** Discovery of genitals, pleasure derived through genitals. Boys experience castration anxiety, fearing genital damage or loss. Oedipus Complex in males as a result of competitive feelings with father is resolved when boy develops normal identification with father. Girls develop penis envy, similar concept for girls is called the Electra Complex. Stage considered ended when temporary resolution of complex occurs; ages 3 - 6 years.

Note: Freud’s controversial theories of psychosocial development provide a framework for understanding human psychopathology as a failure to resolve the Oedipus or Electra complex.

4. **Latency Stage:** Child expands intellectual and social skills while repressing childhood sexuality development. End of this stage signaled by onset of puberty; 6 - 9 years.
5. **Genital Phase:** Oedipus or Electra complex once again raised; development of normal health dictates successful resolution of this complex. Healthy adult sexuality begins to occur with puberty; 8 - 15 years.

Table 6

Gender Role Behavior: Gender role behavior from a sexual viewpoint refers to behavior influenced or precipitated by a personal desire for some type of sexual pleasure. This desire for physical sex resulting in orgasm is mainly explored during adolescence and frequently modified during adulthood. However, most experts feel that the sexual orientation (heterosexual or homosexual) of an individual develops in childhood by ages 6 - 8, and not in adolescence (see Homosexuality section).

Psychosexual Development

The psychoanalytic view of adolescent sexual development by Freud offers health care professionals another framework for assessing adolescent sexuality. Freud contended that adults develop as sexual beings from birth through adulthood (see Table 6). Though various scholars disagree on the exact meaning of these stages, all agree that by the time a child enters puberty, he/she should have developed a good self-image; a sense of security; a willingness to trust others; a conscience and a normal sense of right versus wrong. If this is not the case, major problems in adolescence and adulthood are likely to unfold. One can also conclude that sexuality does begin at birth or even at conception.

A review of normal childhood behavior reveals that physiologic components to sexuality are evident at an early age. For example, erections are noted even in utero; orgasm as a neurophysiological phenomenon can occur as early as the fourth month of life and is common in males 6 to 8 years of age. Female newborns often have leukorrhea or vaginal discharge as a result of maternal hormones. Masturbation or self-genital manipulation for pleasure is very common between ages 2 - 6, and latency stage children are naturally curious about the anatomy of the opposite sex (Haffner, *Facing Facts*, 1995).

These are normal developmental phenomena, and parental attitudes are a major influence on attitudes that children develop about sexual behavior and feelings. As noted by Mary Calderone:

Whatever happens, it is clear that by the time the child arrives at school, it has already received, for good or ill, the most profound as well as the most unchangeable sex education it will ever receive in its life.

If a parent finds a 4 year old masturbating and aggressively reacts to inform the child it is "unclean" and not "respectable," the child clearly learns to associate normal sexuality with negativism — a lesson carried throughout his/her life. If the natural curiosity of the latency age child is totally repressed, the child receives the wrong message about human sexuality.

Ignorance on the part of parents and failure to teach the child normal sexual concepts result in numerous psychosexual difficulties in adolescence and adulthood. It is curious to see 5 year olds who can name the most common body parts but not their own genitals. It is even more curious to see health care professionals contribute to this by not exploring such ideas with parents and by not even including the genitals as part of the normal physical examination. When the health care professional does not even visibly inspect external genitals during routine physical examination, the child learns the lesson taught by parents — that genitals and sexuality are negative (even "dirty") and to be avoided. Health care professionals must learn normal concepts of human sexuality and encourage parents to do so also. Other groups, such as religious and educational institutions, profoundly affect children and must actively join parents in the area of sex education. As often noted by Doctor Mary Calderone:

Sexuality education is the knowledge that we are all sexual human beings, that our sexuality is part of our lives and can be an enhancement or enrichment of our total personality.

Unfortunately, the ignorance of children and the negative mixed messages they receive about human sexuality contribute to the many sexuality-related problems seen in many youths and adults: a) depression, b) serious rebellion against society, c) sexually transmitted diseases, d) pregnancy, e) incest, f) runaway behavior, g) adolescent prostitution, h) marital dysfunction, and i) sexual dysfunction. Some of these problems are discussed later in this manual. However, it is important to remember that sexuality is simply a very important part of life and that failure to deal with normal concepts results in major problems in adolescence and adulthood.

Negative parental and societal attitudes are a major factor in this unfortunate situation. Therefore, health care professionals need to aid parents and their children in resolving this problem. A minority of the population is against such an approach. Studies show that the majority of the American population with knowledge about such problems as pregnancy and sexually transmitted diseases do favor sensible sex education for their children (Selverstone, 1992).

Attitudes and Sexuality

An excellent example of the potential detrimental effect that negative societal attitudes can have on sexuality is offered by looking at historical views on masturbation (Greydanus, 1982). For centuries, this persistent aspect of sexuality was condemned as sinful and/or harmful to human health. Some incorrectly attributed this conclusion to Genesis 38:9 when Onan was condemned for not impregnating his brother's wife after the brother died. This was part of the Levirate Marriage Concept which was intended to assure survival of human civilization at a time of very high infant mortality rates and relatively short human life spans. Though Onan performed *coitus interruptus*, many have incorrectly called masturbation *Onanism*. Galen (180 A.D.), the famous Roman physician, wrote that masturbation was a very harmful habit and when encountering a male who engaged in this practice, he warned:

Watch carefully over this young man, leave him alone neither day nor night; at least sleep in his chamber. When he has contracted this fatal habit (masturbation), the most fatal to which a young man can be subject, he will carry its painful effects to the tomb — his mind and body will always be enervated.

In 1716, Bekker wrote a book called *Onania, The Heinous Sin of Self Population*, which strongly advocated the view that masturbation was immoral and caused health problems. In 1766, a influential Swiss physician, Tissot, wrote what was to become a well-known book called *A Treatise on the Diseases Produced by Onanism*. His book offered this same thesis and such a conclusion became the dominant medical and religious view for the next 150 years or more. Eventually, it was taught in medical schools that

most of human medical and mental illnesses were the result of masturbation.

Various treatments were devised including prayer, diverse dermatological agents, opium, diet, genital cautery, electrodesiccation of rectum or genitals, devices to prevent penile tumescence (including the spermatorrhea ring with spikes in its middle), circumcision, clitoridectomy, castration and others. From 1890 to 1925 there was an American group of surgeons (called the Orificial Surgery Society) who taught and practiced genital surgery as treatment measures for masturbation. The roots of such ideas are deeply imbedded in religious bias and fear that masturbation injures sperm — thus possibly interfering with the survival of civilization.

A gradual change in such attitudes has been observed in the current century. During the early part of the 20th Century, authors stressed that masturbation as such may not be harmful, but guilt over such worry certainly can be injurious to mental health. By the middle of this century, many physicians accepted this concept and numerous researchers began to study masturbation as a very common aspect of normal human sexuality. It was noticed that genital self-stimulation for pleasure is practiced by most adults in some manner or other without deleterious effects on human physiology.

Pediatricians now teach that “excessive” masturbation in infants may result from such problems as pinworm infestation, diaper dermatitis, tight clothes, non-specific genital pruritus, phimosis and other medical conditions. Freud's view that masturbation drained energy from children is not upheld now. However, it is known that certain masturbation variations can be harmful; as for example, the adolescent **sexual asphyxia syndrome** — in which the young person attempts to partially hang himself/herself by the neck (“partial hanging”) while masturbating in order to achieve orgasm.

Current teaching among *au courant* medical or psychological groups is that masturbation is not harmful by itself and can be useful as part of a therapeutic approach to correct various sexual dysfunctions. Some youth, encouraged by their “peer” journals, are encouraged to masturbate in order to relieve sexual tension. However, there still exists considerable worry by parents about the “perceived” effects of masturbation on their children. Thus, anxiety about masturbation and other important aspects of human sexuality remains today, especially because adequate

sex education is rarely granted to children and youth. Young children reflect this ignorance and uneasiness about their own sexuality with resultant negative effects. A partial solution of this complex problem would be to encourage parents to acquire a broad knowledge of human sexuality which is consistent with their own moral philosophy and then to share this with their offspring. Health care professionals can assist in this goal as well, as they interact with children and youth. Such concepts about masturbation can also be applied to other important aspects of human sexuality.

Normal Adolescent Sexuality Stages

The young adolescent resumes previously acquired interest in the development of interpersonal relationships. Typically, the youth approaches this from a narcissistic viewpoint in which the individual's interest comes first and concerns of others are not considered. This "selfish" attitude starts with those of the same sex and extends to those of the opposite sex during mid-adolescence.

Considerable energy is spent acquiring social skills and friendships with same-sex individuals. Thus, boys tend to develop "gangs" of males who engage in various behaviors, as each member tests the other in diverse aspects of adolescence. Definitions of masculinity are tested and confirmed within such groups. Homosexual experimentation and considerable false braggadocio about sexuality are quite common.

Girls tend to associate with a few very close girlfriends and then, to a lesser extent, deal with a larger group of females. The extent of female masturbation and homosexual experiences is unknown, but is probably less than that reported in males. This early adolescent phase of development is often referred to as the homosexual phase and is considered normal. (Another section of this manual further expands on homosexuality and the adolescent.) Also, classic Freudian theory teaches that early adolescence is the time for reemergence of the Oedipus Complex and, if normal sexual health is to occur, it must be finally resolved.

Middle adolescence is typically called the heterosexual stage, as youth acquire diverse experiences with the opposite sex. Late adolescence is normally the time to begin consideration of available adult lifestyles. During middle adolescence, depending on the youth's self-image, opportunity, and parental influence, there is a normal sequencing of this heterosexual development. It begins with

interest in the opposite gender, and is followed by group dating, individual dating, and eventually sexual intimacy. Such intimacy runs an individual course including hand-holding, superficial versus "serious" kissing, petting, oral sex and/or coitus. This relationship is also described as narcissistic (generated from self-interest) and deeply embedded in resolution of the Oedipus or Electra Complex.

Kinsey, 1948, reported that 20% of females aged 16 - 20 were coitally experienced. Sorensen, 1973, surveyed 400 American youth and reported coital experience in 44% of males versus 30% of females aged 13 - 15; this contrasted with 72% of males and 57% of females aged 16 - 19. Kantner and Zelnik published several well known survey reports from the 1970s (see Table 7) indicating that there are millions of American teenagers who are coitally active. In 1971, they reported 46% of females were sexually active by age 19; in 1976 this was reported to include 55% of unmarried 19-year-old females and 70% of unmarried 19-year-old males.

Recent studies also confirm such data (Orr, 1989; Sonenstein, 1989). Studies have noted that coital experience by age 19 for Black males is 92.2% and 77% for Black females. For Hispanic males, the rate is 78.5% and 58.6% for Hispanic females (Hayes, 1987; Hoffer 1987). Coital experience of females under 15 years ranges from 12 to 55% according to different studies (Irwin, 1990; Howard, 1992). Researchers also estimate that the average age of onset of sexual activity (sexarche) is 15.5 years for the Black teenage females surveyed and 16.4 years for the white females (Clark, 1984; Zelnik, 1983). Studies noted that 31% of sexually active female adolescents reported two to three sex partners; that 9% had four or five partners; and 10% claimed over five sex partners.

PREMARITAL SEXUAL ACTIVITY OF ADOLESCENT FEMALES			
Year	14 years	17 years	19 years
1971	14.4%	26.1%	46.4%
1976	18.6%	42.9%	59.5%
1978	22.5%	48.5%	69.0%

Source: Zelnik and Kantner, *Family Planning Perspectives* 9: 55, 1979.

Table 7

The 1990 Youth Risk Behavior Survey was a national school-based study which surveyed over 11,000 high school students (9th - 12th grades) in all 50 states, as well as the Virgin Islands, Puerto Rico and the District of Columbia. It reported 54% of these students reported having coital experience, 30% of them during the preceding three months. Males reported a higher rate of coital experience at 61% overall (43% over the past three months) versus 48% overall (36% over the past three months) for the girls. This now-classic report also noted that 33% of boys under age 15 years and 20% of girls under age 15 had experience with coitus. Approximately 27% of the boys and 12% of the girls had four or more sex partners (Haffner, *Facing Facts*, 1995). Other recent studies confirm the high coital activity rate of American teenagers (Leigh, et al, 1994).

Since young people are generally quite ignorant about human sexuality, it is not surprising to note that these millions of sexually active youth produce 1.3 million pregnancies and over three million sexually transmitted disease cases each year in the United States. It also results in 31,000 pregnancies in females 15 years of age or under and in over 400,000 annual abortions in females of all ages. Adolescent females account for 13% of all U.S. births (4,158,212 in 1992) and 26% of all abortions.

Following is information on U.S. adolescent pregnancies:

- 1 in 10 adolescent females becomes pregnant each year, 16% are intentional.
- In 15 - 19 years olds, 14% of the pregnancies result in miscarriages, 35% end in abortions, and 51% result in live births (Moore, 1995).
- In 1992, 25% of births to adolescents were not first births; this represented a 12.5% increase in repeat child bearing during adolescence since 1985.
- In 1992, 10.9% of the white mothers were under age 20 (producing 505,415 live births) versus 22.7% of African-Americans who were mothers under age 20 (with 153,248 live births); 20% of Native American mothers were under age 20 (with 7,877 live births) and 5.6% of Asian or Pacific Islander mothers were teens (with 8,404 live births).
- The percent of teen births occurring outside of marriage rose from 15% in 1960 to 71% in 1992. The increasing birth rate noted in unmarried adolescents is mostly due to a recent tripling of birth rates to unmarried white

teenagers. 1992 data note a birth rate of 112.4 per 1,000 females aged 15 - 19 in the African-American population versus 51.8 per 1000 for the 15-to-19-year-old-white female.

- There has also been an increase in birth rates for 10- to 14-year-old females, from 0.8% in 1960 to 1.4% in 1991 and 1.3% in 1992. In 1960, there were 6,780 births to females ages 10 - 14, compared to 11,486 in 1989 and 12,220 in 1992.

The negative psychosocial risks to the adolescent mother and offspring are well described in the literature (Davis, 1990; Carter, 1994; Hofmann and Greydanus, 1989, 1997). The complex problems of adolescent sexuality can be further understood by noting the unknown thousands of incest cases, as well as sexual assault incidents, which occur each year to young people, to an estimated one million runaway youths, and to the estimated one million adolescent prostitutes (male and female) who exist in this country. The impact of sexually transmitted diseases (discussed later) can be partially realized by observing that sexually transmitted diseases involve a diverse list of over 20 diseases, ranging from well-known entities such as gonorrhea or Acquired Immune Deficiency Syndrome (AIDS) to diseases rarely heard of by the general public such as Behcet's or Reiter's Syndromes.

Limited sex education can again be invoked as a partial explanation for such tragic adolescent sexuality statistics. Youth are naturally curious about sexuality and often experiment widely, especially during mid-adolescence. Today's society stresses the enjoyment of human sexuality but often, paradoxically, ignores the responsibility and potentially negative consequences of unwise sexual experimentation. Males are often ignored in such education. Many adolescent males eagerly experiment with their sexuality without regard for others. Part of this is the "normal" narcissistic stage of adolescent sexuality, while part of it results from a society which exposes young people to sexual advertisements and promiscuous lifestyles that don't show the consequences of irresponsibility. The modern media (cable T.V., videos, etc.) may be having a profound effect on America's youth, without parents really being aware of what is going on.

As previously noted, most youth begin to overcome their narcissistic heterosexual experimentation in late adolescence; at this stage youth begin to prepare for

adulthood by serious consideration of a job investment, as well as an adult lifestyle. As indicated in Table 8, there is an amazing variety of lifestyle alternatives available to adult society. Relationships in late adolescence should switch from “selfish” concerns to overt caring about the other individual, which should be the goal of adult sexual relationships. Unfortunately, the high rate of divorce and sexual dysfunction reported in current adult populations indicates that this is not always the case.

**LIFESTYLE ALTERNATIVES
IN ADULT SOCIETY**

1. **Traditional monogamy**
2. **Serial monogamy (repeat marriages)**
3. **Single parenthood**
4. **Cohabitation**
5. **Singlehood**
6. **Communal living**
7. **Child-free relationships**
8. **Swinging and/or group sex**
9. **Group marriage (one married couple adding an additional adult)**
10. **Synergamous relationship (several couples with various sexual arrangements)**
11. **Open-ended relationships in marriage (freeing either partner to develop sexual contacts outside the marriage)**
12. **Celibate marriage**
13. **Family network systems (several families joined together with or without traditional sexual relationships)**
14. **Secret extramarital relationship**

Source: *SIECUS Rep* 12(3): 1-5, 1984.

Table 8

**Responsible Male Sexuality:
An Oxymoron in the Twentieth Century?**

Researchers and educators in sexuality often note considerable differences in how both sexes view sexuality. Boys’ development of sexuality is termed presocial versus girls who learn their early concepts of sexuality in the context of social relationships (Gagnon and Simon, 1978). American society conditions males early to define masculinity as synonymous with such destructive concepts as dominance, competition, performance and achievement (Edwards, 1987).

The American media is often indicted in this regard for teaching males that masculinity implies that one is aggressive, has a “duty” to perform (whether scoring in basketball or coitus), and has an out-of-control sex drive that can only be stopped by one’s partner. This same philosophy implies that if a girl gets pregnant (by not saying “no” or not using contraceptives), it is her fault, not his. Males are taught that “shared contraceptive” responsibility is not an important concept which applies to them. Even the media censors often remove the topic of contraception when coitus is demonstrated or implied (Gerzon, 1983).

Males lacking extended contact with their fathers for appropriate role model patterns are especially vulnerable to such misogynic cues from the media (Lynn). Males are taught from early life and throughout life to be more distrustful and insecure than females. Males are taught to control their sexual thoughts in regard to males and to use homophobia as a guiding principle (Calderwood, 1984). Males are more likely to carry negative attitudes about their bodies from their childhood throughout adolescence and adulthood. Though males tend to masturbate earlier than females, they are more likely to avoid group masturbation due to societal homophobic attitudes (Gagnon and Simon, 1978).

The adolescent male is generally exposed to very limited sexuality education and receives little contraceptive information/services. Sexuality education programs are often geared toward females, and birth control clinics often provide inadequate services to males or exclude males altogether (Edwards, 1987). A common reason given by males for not using contraception is their limited knowledge base (Pitt, 1986), and studies also suggest that the male exerts more influence than the female regarding the use (or non-use) of contraception (Zelnick, 1985). Others conclude that the changes in sexual values in America over this past

century have allowed males to be raised with much conflict and confusion in regard to their sexuality and in methods of sexual expression (Hacker, 1990). This confusion and lack of control contribute to the high morbidity and mortality currently described in adolescent males (Strasburger and Greydanus; Blum). The current adolescent male is exposed to a hostile environment that promotes violence (suicide and homicide), homophobia, limited sexuality education, limited exposure to medical services and limited knowledge of disease prevention (such as use of condoms or self testicular examinations). This dangerous environment continues throughout adulthood (Solomon; Goldberg; Calderwood).

Homosexuality and the Adolescent

Kinsey, et. al., (1948, 1953) startled American society by reporting that 4% of the adult male population and possibly 2% of the adult female population were exclusively homosexual with respect to their sexual behavior and fantasy life. Their classic research included a thorough survey of 5,000 adult males and 6,000 adult females. They revealed the astonishing data that 50% of the adult male population had a prepubertal homosexual experience, that 33% experienced such behavior with orgasm, and that 10%

had this orientation for at least three years after puberty.

Research since then generally has confirmed that a small but definite percentage of the American adult population is exclusively homosexual, and also adds that many individuals have both homosexual and heterosexual features. The famous Kinsey Scale of Sexual Orientation (see Table 9) notes adults' sexual orientation ranges from exclusively heterosexual (rating 0) to exclusively homosexual (rating 6) to various mixtures (ratings 1-5).

There are many studies indicating adults display diverse sexual orientations. The Bell and Weinberg Study, 1978, noted that 25% of "homosexual" adults also had heterosexual inclinations at various levels. McConaghy, et al, 1977, surveyed 138 male and 58 female medical students in Australia. Their study noted 60% of the students were aware of homosexual feelings at adolescence, while 40% still retained such feelings. Further rating of the male group using the Kinsey Scale of Sexual Orientation follows: 55% were at level 0 versus 3% at rating 6; 38% were at level 1; 4% were in ratings 2, 3, or 4; and 1% were at level 5. The females were listed as 52% at 0 versus 3% at rating 6; 33% at level 1; 7% at rating 2, 3, or 4; and 5% at rating 5. This indicates that young people seem to enter adulthood with a variety of sexual orientation options.

KINSEY SCALE OF SEXUAL ORIENTATION			
Rating	Description	Males	Females
0	Exclusively heterosexual (in sexual behavior and fantasy)	55%	52%
1	Essentially heterosexual with incidental or limited homosexual history	38%	33%
2	Largely heterosexual with distinct homosexual history	4%	7%
3	Equal heterosexual and homosexual orientation		
4	Largely homosexual with distinct heterosexual history		
5	Essentially homosexual with limited heterosexual history	1%	5%
6	Exclusively homosexual (in sexual behavior and fantasy)	3%	3%

Table 9

Societal attitudes have generally been very intolerant of same-sex orientation, especially for males. Both new and old religions (especially the Judeo Christian faiths) have often condemned homosexuality as immoral, usually for the same reasons outlined under the masturbation section. Yet, homosexuality has remained a persistent element of nearly all human civilizations. Currently, society is under considerable conflict as to the morality and acceptability of homosexuality.

Young people face this same dilemma, especially since some of them do become gay and most are exposed to the modern movement of the American Gay Society which encourages openness. A significant step in that direction occurred when the American Psychiatric Association, in 1974, adopted the official policy statement that: homosexuality, in and by itself, was not a psychiatric disorder. The American Psychological Association officially accepted this same concept in 1975. Prejudice, of course, still continues toward this phenomenon.

Though there has been considerable research about the etiology of homosexuality, controversy remains (Greydanus and Dewdney, 1986; Rowlett and Greydanus, 1994). Some maintain that homosexuality results from sex hormone-controlled "programming" of the brain (hypothalamus) in utero and then combines with complex social learning factors in childhood. It has been observed that if a female (XX) fetus is exposed to excessive male hormones (as noted with some forms of congenital adrenal hyperplasia), the resultant female child may exhibit some "masculine" traits, such as seeking male aggressive play or ignoring doll playing.

However, proof for theories of etiology has not been truly established. Most homosexual individuals have the same sex hormone levels as their heterosexual counterparts. Though very recent data does suggest that homosexuals respond differently to certain hormone injections (as opposed to heterosexuals), more research is clearly necessary in this area.

Psychological studies and theories abound regarding homosexuality, but so do the disagreements. Freud felt that individuals began human life with bipotentiality — they could become homosexual or heterosexual, but usually the heterosexual aspect dominated. Freud did not consider homosexuality a mental illness, as noted by his famous 1935 response to an American mother of a homosexual:

Homosexuality assuredly is no advantage, but nothing to be ashamed of, no vice, no degradation; it cannot be classified as an illness; we consider it to be a variation of sexual functioning produced by a certain arrest of sexual development.

Other mental health professionals have disagreed over this point of the "normality" or "abnormality" of homosexuality. Though some homosexuals were reared in homes displaying very abnormal family dynamics, most were not. Are homosexual adults different from heterosexual adults from a psychological viewpoint? Again, studies conflict regarding this point. Opinions vary from calling homosexuality normal or abnormal to even arguing that to just study homosexuality implies unacceptable prejudice against this specific lifestyle. To this situation, add in Kinsey's Scale of Sexual Orientation, stages 1-5, and the result is even more confusion and conflict.

What does this mean for the adolescent? What is clear is that many adolescents experiment with both heterosexual and homosexual relationships. Experimentation does not mean that the youth is necessarily homosexual. However, sexual feelings and experimentation can be confusing and anxiety provoking for young people. Sometimes a health care professional or mental health professional can be very helpful in sorting out such feelings.

Young people should be encouraged to keep their options open until late adolescence or early adulthood; by that time most are aware of their real sexual orientation — and usually this is heterosexual. As noted earlier, adolescence or puberty does not bring out or induce homosexuality. Sexual orientation is a very complex but poorly understood phenomenon which is established by middle childhood (age 8). Early and mid-adolescence stimulate various stages of experimentation while late adolescence should allow some resolution in the area of acceptance of a sexual orientation.

There are many variations of sexual behavior and orientation. Some individuals have opposite-gender behavior as well as fantasies from late childhood through adolescence, which go on into adulthood. Although rare, there are cases of individuals truly wishing to change their sex (transsexualism). There are also a few males who display cross-dressing interests (transvestism). Most transvestites are heterosexual males. Some of them may

need careful psychosocial assessment and referral to appropriate mental health services.

When a persistently gay individual with no interest in cross dressing or in a sex change seeks help from a health care professional, how should the situation be handled? Non-pejorative counseling may help such an individual discover what his/her feelings really are. Green (1974) identifies three stages in this process: a) first feeling "different"; b) developing a crush on a same-sex person; and finally, c) becoming aware of his/her homosexual orientation. There may be a subsequent "coming out" phase in which the teenager seeks to reveal this "secret" to others, such as to family or peers. Troiden (1979) has outlined four stages in the development of gay identity (see Table 10).

Young people who are going through various stages of homosexual identity need as much support as possible. They have to deal with society's prejudicial attitude, peers' ridicule and parental rejection. They may develop poor social skills and suffer from a lack of appropriate adult role models. Limited sex education and the need for secrecy, result in various potential psychological and physiological difficulties. Recent data suggest that gay youth account for approximately 30% of completed suicides while 30% of a surveyed group of gay and bisexual males have attempted suicide at least once (U.S. DHHS, 1989; Remafedi, 1991).

Young gays may unknowingly be exposed to various sexually transmitted diseases, especially some types which the heterosexual community does not see, such as enteric diseases. Gay bowel syndrome is characterized by giardiasis, amebiasis, shigellosis, herpes, gonococcal proctitis, and others. Younger people may only find gay contact at public places where problems with sexually transmitted diseases, including HIV infection, often exist.

It is not surprising then to see many of these young people developing intense struggles to find an acceptable self-identity. Health care professionals can help such individuals by a) providing non-prejudicial counseling; b) teaching improved social skills; c) possibly arranging family counseling; and d) reminding young people to always keep their options open (Beach, 1993).

If the individual does seem disturbed by homosexual orientation, referral to appropriate mental health or counseling facilities may be helpful. However, trying to force change on a young person who seems content with his/her gay lifestyle is not productive. It should be remembered that the American Psychiatric Association lists only ego-dystonic homosexuality as a disorder — that is someone who is disturbed by his/her gay identity and/or wishes to change.

TROIDEN'S FOUR-STAGE MODEL: DEVELOPMENT OF GAY IDENTITY

A. Stage One: Sensitization

Gains homosexual experiences in childhood and adolescence while learning of general society's homophobic view on homosexuality.

B. Stage Two: Dissociation and Signification

Struggles to reject the concept that society's negative view on homosexuality applies to one's self.

C. Stage Three: Coming Out

Identifies one's self as "gay" and reaches out to become involved in some aspect of gay society subculture; begins to consider homosexuality as a viable lifestyle option.

D. Stage Four: Acceptance

Fuses one's concepts of sexuality and emotionality as an adult. Some are "arrested" at stage three while others will eventually arrive at Stage Four.

Source: Troiden R., *Psychiatry* 42: 362-373, 1979.

Table 10

The heterosexual community must realize that there are millions of American adults who share the following comments of Brian McNaught:

I like being gay. I like knowing there is something very unique and even mysterious about me which separates me from most of the rest of the world. I like knowing that I share a special secret with a select group of men and women who lived before me and with those special few who will follow.... I like walking at life's edge as a pioneer; as an individual who must learn for himself the meaning of relationships, love of equals, sexuality and morality. Without the blessings of the church and society, my life is one outrageous experiment after another. I like knowing that if I settle into a particular frame of thought, it is because I have found it appropriate and not because I was raised to believe that's the way things must be (Greydanus and Dewdney, 1986).

Pubertal Development Of Adolescents

In addition to psychosocial, cognitive, and sexual stages, young people go through well-known physiological stages which are summarized by the term puberty. Puberty occurs because central nervous system maturation triggers a rise in sex hormones, including adrenal hormones (androsterone and dehydroepiandrosterone), estrogen (female hormone) and testosterone (male hormone). The maturation of the pubertal axis (hypothalamic-pituitary-adrenal-gonadal axis) is poorly understood. Proposed theories include such concepts as reduced hypothalamic sensitivity to gonadal steroids, central nervous system maturation, adrenal gland secretion, attainment of a special "critical" weight or body-fat-to-total-body-weight ratio, and others.

Though the cause is unclear, the hypothalamic-pituitary axis does become activated, with resultant production of gonadotropins — Follicle Stimulating Hormone (FSH) and Luteinizing Hormone (LH). These important chemicals then stimulate the gonads to secrete testosterone, estrogen, and/or related chemicals to induce the classic secondary sex characteristics — indicating to the individual, and

eventually to others, that clinical puberty has begun. The secret to this marvelous process seems to lie with the hypothalamus, the brain part which has been called the biological clock of life which determines many aspects of human life — birth, puberty, cellular death, and even death of the whole organism.

This pubertal axis is intact even in utero but normally does not become activated until 8 - 15 years of age. Adolescence is made more difficult because not all youth change at the same time, even though they are of the same chronological age:

1. Females can start puberty as early as 8 or 8½ or wait until 14½ to 15 years. Precocious puberty in the female is defined as such events occurring under 8 or 8½ years of age while delayed puberty implies absence of some pubertal events by age 14½ to 15.
2. Males are said to be in precocious puberty under age 9½ to 10 while delayed puberty also starts after 14½ to 15 years of age.

A careful evaluation is indicated for any young person who meets the criteria for delayed or precocious puberty. However, girls who enter into precocious puberty under age 8 are usually normal and simply have idiopathic, nonorganic precocious puberty; males have a much higher incidence of organically-induced precocious puberty.

The first sign of clinical puberty in females is called thelarche (breast bud stage). In males, the first sign is testicular enlargement beyond 2.5 centimeters in diameter. These signs are then followed by the major physical changes of puberty as outlined in Table 11. Such changes occur in a normal sequential pattern over a two-to-four-year period, as outlined in Table 12. The chronological variations in these changes are considerable, as reviewed in Table 13.

MAJOR PHYSICAL CHANGES OF PUBERTY

- I. Major increase in genital system (primary and secondary sex characteristics)
- II. Gaining of 25% of final height (distal growth, e.g., of feet, may precede that of proximal parts, e.g., the tibia, by three to four months)
- III. Doubling of lean and nonlean body mass (gaining 50% of the ideal body weight)
- IV. Doubling of the weight of the major organs; central nervous system maturation (without increase in size)
- V. Maturation of facial bones
- VI. Marked decrease in lymphoid tissue

Source: Greydanus, D. E. and McAnarney, E.R., *Survey of Clinical Pediatrics*, 16, 1981.

Table 11

**THE SEQUENTIAL
CHANGES OF PUBERTY***

Adolescent female

- Breast bud (thelarche)
- Pubic hair development (pubarche)
- Height velocity peak
- Menarche
- Axillary hair
- Final pubertal changes, e.g., full breast, pubic hair, and completed height development

Adolescent male

- Early testicular growth
- Pubarche
- Testicular and penile growth
- Nocturnal emissions
- Height velocity peak
- Marked voice changes
- Facial hair growth
- Final pubertal changes, e.g., full genital, height, and muscle development

* These changes normally occur over a two- to four-year period.

Source: Greydanus, D. E. and McAnarney, E. R., *Survey of Clinical Pediatrics*: 16, 1981.

Table 12

<u>Pubertal Change</u>	<u>Age Range of Appearance (Years)</u>
Thelarche	8.0 - 14.8
Pubarche	9.0 - 14.0
Menarche	10.0 - 17.0
Testicular enlargement	10.0 - 14.8
Peak height velocity (male)	11.0 - 16.6
Peak height velocity (female)	10.0 - 14.0
Adult breast state	12.0 - 19.0
Adult genitalia	13.0 - 18.0

Table 13

In comparing youth, it is very useful to assign a sexual maturity rating for some idea of where he/she is on the physiologic scale of puberty. Table 14 reviews these stages for females and Table 15 lists stages for males. Once thelarche occurs, menarche (onset of menstrual periods) usually occurs 1 - 3½ years later; regular menses usually ensues within one to two years of menarche, with an average time of 20 months.

SEXUAL MATURITY RATING OR TANNER STAGING IN FEMALES

<u>Stage</u>	<u>Breasts</u>	<u>Pubic Hair</u>	<u>Range</u>
I.*	None	None	Birth to 15 years
II.	Breast bud (thelarche): areolar hyperplasia with small amount of breast tissue	Long downy pubic hair near the labia; may occur with breast budding or several weeks to months later (pubarche)	8½ -15 years (Some use 8.0 years)
III.%	Further enlargement of breast tissue and areola	Increase in amount of pubic hair with more pigmentation	10 - 15 years
IV.+	Double contour form: areola and nipple form secondary mound on top of breast tissue	Adult type but not distribution	10 - 17 years
V.#	Larger breast with single contour form	Adult distribution	12½ - 18 years

- * Peak height velocity often occurs soon after stage II
- % 25% develop menarche in late III stage
- + Most develop menarche in stage IV, 1 to 3 years after thelarche
- # 10% develop menarche in stage V

Source: Greydanus, D. E. and McAnarney, E. R., *Survey of Clinical Pediatrics*: 17, 1981.

Table 14

SEXUAL MATURITY RATING OR TANNER STAGING IN MALES

<u>Stage</u>	<u>Testes</u>	<u>Penis</u>	<u>Pubic Hair</u>	<u>Range</u>
I.	No change, testes	Prepubertal 2.5 cm or less	none	Birth - 15 years
II.	Enlargement of testes, increased stippling and pigmentation of scrotal sac	Minimal or no enlargement	Long, downy hair often occurring several months after testicular growth; variable pattern noted with pubarche	10 1/2 - 15 years
III. %	Further enlargement	Significant penile enlargement, especially in length	Increase in amount, now curling	10 1/2- 16 1/2 years
IV. +	Further enlargement	Further enlarge- ment, especially in diameter	Adult type but not distribution	Variable; 12 - 17 years
V. *	Adult size	Adult Size	Adult distribution (medial aspects of thighs, linea alba)	13 - 18 years

% Peak height spurt usually between stages III and IV

+ Axillary hair develops, as well as some facial hair

* 20% have peak height velocity now; increase in body hair and musculature, etc., continues for several months to years

Source: Greydanus, D. E. and McAnarey, E. R., *Survey of Clinical Pediatrics*: 17, 1981

Table 15

Clinical correlations with sexual maturity ratings (Tanner Stages) may prove very useful, as outlined in Table 16. For example, a sexual maturity rating of Tanner IV in a female individual at age 12 reveals that she is physiologically ahead of her peers but that she may not be psychologically ready for the advances of males who are chronologically older. In the case of a 15-year-old Tanner II male who is much shorter and underdeveloped as compared to his peers, considerable psychological repercussions can

be expected. Growth in females is accelerated between Tanner II and III (just after thelarche and before menarche) while boys do not normally achieve their adolescent growth spurt until stages III to IV. Thus, the classic eighth-grade picture shows relatively “tall” girls and “short” boys who are actually in similar respective Tanner stages. Girls tend to enter puberty only a matter of months ahead of boys. This same picture reveals the tremendous physiologic variation of both sexes, from stages I to V.

FACTORS ASSOCIATED WITH TANNER STAGING

<u>Process Disorder</u>	<u>Tanner Stage</u>
Hematocrit rise (male).....	II-V
Alkaline phosphatase peak (male).....	III
Alkaline phosphatase peak (female)	II
Adolescent hormonal levels (rise in estrogen for females/testosterone for males)	II-V
Peak height velocity (male)	III-IV
Peak height velocity (female)	II-III
Short male with growth potential	II
Short male with limited growth potential	IV-V
Usual timing of menarche	Late III or early IV
Appearance of menarche.....	1 to 3.6 years post stage II
Slipped capital femoral epiphysis	(obese) II or III
Acute worsening of idiopathic adolescent scoliosis (time for close monitoring).....	II-IV
Osgood-Schlatter’s disease	III
Oral contraceptive prescription.....	IV
Diaphragm prescription	IV-V
Observe for worsening of straight-back syndrome.....	II-IV
Appearance of “normal” gynecomastia	II or III
Usual appearance of acne vulgaris	II or III
Gonococcal vaginitis.....	I
Gonococcal cervicitis (with or without pelvic inflammatory disease).....	II+
Timing of orchiopexy.....	I
Decreased incidence in serous otitis media	II or III
Mild regression in vaginal hypertrophy	V
Timing of breast reduction (if needed)	V
Timing of rhinoplasty (if needed)	II-V
Strong suspicion for organic disease (abnormal progression or regression).....	Change in Normal Staging
Counseling for further breast growth.....	II
Increased levels of serum uric acid in males	II-V

Source: Greydanus, D. E. and McAnamey, E. R., *Survey of Clinical Pediatrics*: 18, 1981.

Table 16

The reader is urged to review Table 16 carefully since it provides many useful clinical correlations. For example, a girl who is 14 years of age and who arrived at Tanner Stage II eight months previously would not be expected to be menstruating, but a 14-year-old-girl who developed thelarche at age 10 should be menstruating. A boy who is at Tanner II still has considerable growth potential within his genetic framework, while the Tanner IV boy does not, regardless of actual age. Screening for scoliosis (and its worsening) should be done between the II - IV Stages regardless of age. If a Tanner I female develops vaginitis, a single vaginal culture should be done for gonorrhea. Because a Tanner II and beyond female may also develop cervicitis from gonorrhea, an adequate screening with a cervical culture is necessary. See Table 16 for other disorders and associated Tanner Stages.

Miscellaneous Adolescent Stages

There are other divisions or stages of adolescence one could use in addition to the reviewed philosophies of Piaget, Freud and Erickson. For example, Kohlberg notes that children and youth acquire adult concepts of moral judgment in stages. Older children are in the advanced conventional morality stage, in which there is a gradual change in attitude from pleasing certain individuals such as parents or teachers to a desire to obey the rules of society. Teenagers often enter the post-conventional morality stage in which, along with the Piagetian formal operational stage, the individual gradually acquires his/her own moral philosophy based on a respect for the rights and privileges of others.

Other learning theory models are described (Dixon and Stein, 1987). The Behaviorists Learning Theory (Pavlov, Watson, Skinner) suggests that children and teenagers learn through a series of responses to their behavior and through environmental actions. Rewarded behaviors can become permanent while behaviors which are punished or ignored tend to be extinguished (disappear). The Social Learning Theory (Bandura) suggests that children and teenagers learn by observing models of behavior around them so they can fit into various social organizations which are deemed important. Social structures are very important to the child's growth and development. The Theory of Social Biology (Wilson; Freedman) suggests that behavior is predetermined to maximize reproductive instinct opportunities within the cultural limits of the child or

teenager. Social behavior is determined as is biology.

The reader can also refer to the developmental tasks of Havighurst which outline various physical-intellectual and social-personal tasks of individuals according to their different chronological stages: infancy, toddlerhood, early childhood, middle childhood and adolescence. One could add the social condition stages of Sears, the lifestages of Lidt, and others.

Current writers stress newer concepts of female sexuality, as noted by modern female researchers. It is the opinion of researchers such as Gilligan, Miller and Chadorow that traditional views of adolescent development (as Erikson's) fail to accurately portray female adolescent development in current times. When using such traditional standards to compare males to females, female adolescents often appear more immature and depressed than is actually the case.

Current methods of parenting youth often result in males having difficulty in developing relationships while females have more problems with separation issues. Braverman (1985) has recently reviewed some of this new data. The reader is encouraged to review these and other philosophies to help understand the process of adolescence. Thus, one may add additional brushstrokes to complete this general portrait of adolescence.

A review of menarchial data from the past 150 years reveals that from 1840 to 1950, there was a decrease in the average menarchial age of three to four months per generation period. Though some researchers have disagreed with such data, most conclude that there was a definite decrease in age of onset of puberty during the past 100 or more years. The impact of earlier puberty may have combined with changes of societal moral values to contribute to the prevalent open sexual attitudes seen in some of our youth. (Its original cause is unclear, but often better nutrition is implicated). However, this earlier trend has now leveled off, probably since a generation ago.

Finally, the reader is urged to evaluate youth from the various viewpoints presented. The picture of a teenager which has been described includes a youth who is a psychosocial being, a cognitive being, a sexual being and a pubertal being. Better knowledge about where an individual youth is on the outlined stages leads to a better evaluation of a particular youth's problems and how to deal with them effectively. Yet another brushstroke needs to be added to this painting — the youth as a legal being.

LEGAL RIGHTS OF ADOLESCENTS

Anyone involved with youth, including parents, teachers and health care professionals, must realize that American laws are now recognizing the fact that minors (youth) do have some legal rights. Understanding these rights, especially when specific issues arise, is often difficult because the laws are frequently general, vague and nonspecific. Different states disagree on certain details, and thus, one needs to be familiar with current laws in his/her own state. Definition of “the law” tends to be a compilation of various statutes, Supreme Court rulings or decisions (state and federal), as well as interpretation of law philosophy, which covers areas not always specifically covered by an identified law at the local, state or federal level. Only recently has official law identified rights of minors (those under age 21).

The first 100 years of United States history was marked by a legal philosophy that parents essentially had complete autonomy over their children. In this “era of parental autonomy,” children were expected to obey parents and were punished by parents or other individuals such as the police if disobedience occurred. Toward the end of the 19th Century, a shift in legal philosophy developed which ushered in the “era of child welfare.” The laws then reflected the concept that children were different from parents and needed to be protected from abusive parents. If a legal guardian abused these privileges, punishment of the adult was then possible. Thus, juvenile courts developed and child labor was controlled. However, minors were still not allowed to make contracts of their own.

Common Law tradition has often held that to treat a minor without appropriate parental consent means that one is committing an “unauthorized touching,” which legally could be called “assault and battery.” Much of this legal philosophy continues today, but it has become a very complex issue in the light of recent legal cases. In 1967, the “Era of Rights of Minors” began with a well-known legal case — *In re Gault*. This case involved a 15-year-old male who was sentenced by a court to several years of institutionalization after being convicted of placing obscene phone calls to a teacher. The boy’s parents brought forth a successful countersuit, claiming the original trial was not legal since it violated the minor’s rights on various grounds (such as no official legal representative, no cross examination and so forth).

Table 17 lists other important cases in the concept of minors’ rights. The Danforth case (1976) placed the minors’ rights against the parents’ rights. This case involved a late adolescent seeking an abortion from a qualified physician. The state court ruled:

The State may not impose a blanket provision requiring the consent of a parent or person in loco parentis as a condition for abortion of an unmarried minor during the first twelve weeks of her pregnancy.... The State does not have the Constitutional authority to give a third party an absolute, and possibly arbitrary, veto over the decision of the physician and his patient to terminate the patient’s pregnancy. Minors, as well as adults, are protected by the Constitution and possess Constitutional rights.... Any independent interest the parent may have in the termination of the minor daughter’s pregnancy is no more weighty than the right of the competent minor mature enough to become pregnant.

Such issues are quite complex and are far from being resolved, especially the abortion issue. However, it seems clear that youth can give consent for medical treatment in some situations, and do not necessarily have to involve parents in all cases. In general, it is best to involve parents in such matters, but this is not always possible or feasible. A non-official legal concept has emerged over the past generation — the **mature minor doctrine**. This implies “emancipated” minors may seek and receive some medical treatment without parental approval or knowledge.

However, the interpretation of “emancipation” can be vague and varies according to different criteria which have been used in various states (see Table 18). Being familiar with one’s own state rules and philosophy is strongly recommended for those who deal with such teenagers. As an example, Tables 19 A and 19B identify some of these specific concepts as they apply to the state of Iowa.

**IMPORTANT LEGAL CASES AND LAWS
INVOLVING LEGAL RIGHTS OF MINORS**

<u>CASE</u>	<u>YEAR</u>	<u>SIGNIFICANCE</u>
In re Gault	1967	Minors have a right to a fair trial before sentencing.
Tinker vs. the Des Moines Independent School District	1969	Minors cannot be removed from school unless their rights are protected.
Roe vs. Wade, Doe vs. Bolton	1973	Women have the right to obtain a first trimester abortion.
Planned Parenthood of Central Missouri vs. Danforth	1976	Mature minors have the right to obtain an abortion regardless of third-party (e.g., parental) disapproval.
Carey vs. Population Services International	1977	U.S. Supreme Court rules that contraceptives must be available to minors and states cannot prohibit it.
Belloti vs. Baird	1979	Judge can grant a minor an abortion with parental notification but without parental consent.
Hyde Amendment	1979	Restricted use of federal funds to pay for legal abortions.
H. L. vs. Matheson	1981	It is legal to require immature and dependent minors to inform parents before abortion is obtained. Parents must be notified before the abortion of their pregnant, immature minor.
DHHS Regulation	1983	Establishment of rules governing protection of human subjects in federally funded, biomedical research.
Webster vs. Human Services	1989	Supreme Court ruling: states are given greater power to determine access to abortion; successful partial challenge to Roe vs. Wade.
Ohio vs. Akron Center for Reproductive Health	1990	Challenged the right of teenagers to obtain an abortion without parental notification; Supreme Court ruled a physician must notify one parent.
Hodgson vs. Minnesota	1990	Challenge to rights of teenagers to obtain abortion with out parental notification; Supreme Court ruled both parents must be notified and a judicial bypass procedure must be available.
Rust vs. Sullivan	1991	Supreme Court upholds federal regulation that prevents family planning centers from discussing abortion.
Planned Parenthood of Southeastern Pennsylvania vs. Casey	1992	Supreme Court upholds 1- and 2-day waiting periods for abortions, very strong abortion informed consent, and laws requiring that physicians report to the state the names of patients on whom they have performed abortions.
Presidential Order (President Clinton)	1993	Removed the "gag rule" for federally funded clinics. (See 1991 ruling.)

Table 17

GENERAL HEALTH CARE CONCERNS

The health care professional should now have enough information to relate to youth. Some teenagers will seem more eager than others to talk to a health care professional. Young adolescents often prefer the assistance of parents, but late adolescents do not; and middle adolescents typically place the health care provider in a very delicate balance between relating to both parents and the young person. In general, the very young teenager, the critically ill and the mentally challenged individual do need active parental involvement. Involving parents as much as possible is usually recommended when health care professionals work with young people.

When possible, confidentiality must be carefully approached and provided. Young concrete-thinking teenagers are especially eager for health information but may be unable to provide detailed answers. In addition to interviews with parents, a questionnaire focusing on health issues (see Table 20) may be helpful. In general, documenting data from as many sources as possible is extremely helpful in evaluating complex situations which involve diverse family dynamics as well as individual personality complications.

VARIOUS CRITERIA FOR EMANCIPATION

1. Age (often over 18, but varies from 14-19)
2. Marriage
3. Parenthood
4. Runaway status (financially independent)
5. Individuals away from home with parental permission
6. Individuals at home who are "essentially independent"
7. Education (as a high school graduate)
8. Member of armed forces
9. Certified by physician and others

Table 18

EMANCIPATION CRITERIA IN IOWA

1. Age: 18 (*Code of Iowa*, Section 599.1)
2. Marriage (*Code of Iowa*, Section 599.1)
Must be at least 16 years old, have the consent of parents and a judge's approval to marry if under 18.
3. Parent-Youth Contract
Parent(s) and youth under age 18 can make a verbal or written contract declaring emancipation. Its legality would depend on the circumstances.
4. The following, by themselves, do not establish emancipation:
 - a) Parenthood
 - b) Runaway status
 - c) Living away from home
 - d) Living at home but "essentially independent"
 - e) Education
 - f) Member of the armed services
 - g) Physician certification

Source: Youth Law Center, Des Moines, Iowa

Table 19A

DISCUSSION OF PARENT-YOUTH CONTRACTS FOR EMANCIPATION IN IOWA

Parent(s) and youth under 18 can make a verbal or written contract declaring emancipation. Its legality would depend on the circumstances.

- In general, individuals over age 18 are allowed to initiate such contracts while those under 18 are not.
- If an individual 16 or 17 years of age seeks medical treatment, understands the physician's recommendations, and explains why parents are not to be involved, then the physician can document this, declare the patient to be an emancipated minor in need of treatment and proceed with appropriate medical treatment. Some consultants recommend having a second physician sign this document also, but it is not an official legal statement.
- The individual who is between 13 and 15 years of age represents a very complex legal situation, even if he or she appears to be fully "emancipated." A minor in need of emergency care, as determined by a physician, can always be treated. A young person who presents with possible sexually transmitted disease(s), pregnancy or drug abuse can also be evaluated and treated without parental consent or knowledge if necessary. As of this date, there has been no successful lawsuit against a physician treating a minor over 15 years of age for any purpose if the minor consented to the treatment. Also, there has not been a successful lawsuit against a physician treating a minor of any age for contraceptive-related services. When treating a minor without parental approval, the youth should be reminded of his/her obligation to follow through with medical recommendations and to consider the cost of such health care.
- Thus, there are some legal rights which a youth has, though the situation currently remains complex and in a state of constant legal flux. Problems of sterilization (especially with mentally subnormal youth), abortion, sexual assault, mental health, health record privacy, payment issues, and others remain critical concepts for individuals involved in the health care issues of adolescents.

Source: Youth Law Center, Des Moines, Iowa

Table 19B

Many youth form therapeutic relationships quickly if the health care professional presents some degree of concern and confidentiality. Some youths (especially young ones) will exaggerate symptoms and this must be taken into account by the evaluator. It is not unusual for many young people to present with anxiety related to sexuality, school performance, and family or peer relationships. Thus, the evaluator can include such questions in the overall interview.

It is important to assess where the young person is in the process of accomplishing adolescent tasks. It is also important for the health care professional to assess what can be done about problems related to goal attainment. Thus, treatment may involve medical or behavioral considerations and may require health providers to have a wide variety of interdisciplinary capabilities. A psychosocial medical screening is recommended for youth in each of their three main psychosocial stages – early, mid, and late. Table 21 outlines some of the medical as well as behavioral problems which one may encounter when evaluating and treating youth.

Complicating Factors

When dealing with problems of teenagers, various complicating factors may be encountered by the health care provider, and these problems may impact considerably on attempts to effectively deal with them (see Table 22). Current societal and family unrest complicates the process of adolescent growth and development to a major extent. The high crime rate, high divorce statistics, high unemployment rates, loss of the extended family unit due to forced mobility of adults seeking jobs, health care coverage changes and other societal factors all create an unstable climate for young people. (Behrman, 1994; Irwin, Brindis, Holt, et al, 1994).

The uninformed health care professional who goes beyond a basic physical examination and gets to know the adolescent is often amazed to see so much family unrest in today's society. Unfortunately, it is becoming commonplace to encounter children and youth growing up in homes with single parents, stepparents, nonparental legal guardians, and constantly changing sex companions of a single parent (Greydanus, 1991). This is not to imply that all single parent households are unstable nor that considerable instability does not occur in some "traditional" two-parent

(never divorced) households; indeed, numerous single-parent families are quite stable. Yet, there are millions of American households that do suffer from severe societal and personal unrest. Unfortunately, this affects the children in these households, and also affects society with even more negative overtones. The miscellaneous adult lifestyles listed in Table 7 seem to complicate this chaos.

A young person who was born into a situation where limited socioeconomic status is the rule is at greater risk for experiencing emotional, behavioral and academic problems. This situation further complicates the picture. Poverty continues to increase in teenagers. In 1980, 13.9% of individuals aged 14 - 21 were below the poverty line; in 1987 this rose to 15.9% and included 11.8% of whites, 30.2% of Hispanics, and 37.6% of Black youth (U.S. Bureau of Census, 1987). The number of individuals aged 14 - 21 below the poverty line rose to 16.0% in 1987 (U.S. Bureau of Census). In 1986, 32.6% of young families (household head under age 25) were below the poverty line — one-third higher than in 1979 (William T. Grant Foundation, 1988). In 1989, the poverty rate for related children under 18 years of age was 17.9% and for female-headed households was 57.4%.

Though some argue to the contrary, health care professionals clearly know that not all individuals have equal access to the best health care. Modern American medicine and dentistry are becoming increasingly expensive, and those without adequate insurance are frequently deprived of certain forms of health care. For example, one sees many poor families who desperately need long-term professional therapy; but with hourly charges of \$50-\$150 many families simply cannot afford it. How many poor young people can afford the costs of modern dentistry or even have access to a personal private physician? This is not to imply that wealthy individuals lack medical or psychological difficulties, but that the poor have even less access to the best care. It is estimated that at least 40% of young people do not have access to appropriate health care! (Behrman, 1994; Irwin, Brindis, Holt, et al, 1994.)

Because issues of basic survival become the major focus for many poor adolescents, they expend all their energy on day-to-day tasks of living. Some poverty-stricken youth simply give up and never fully negotiate adolescent tasks; they seem to get lost in the complicated process of adolescent development in modern life. Of course, major

MEDICAL AND BEHAVIORAL DISORDERS OF ADOLESCENTS

- A. Behavioral Disorders or Concerns
 - 1. Concerns of normalcy (i.e., height, weight, appearance, pubertal status, etc.)
 - 2. Drug abuse (marijuana, alcohol, tobacco, stimulants, depressants, hallucinogens, etc.)
 - 3. School failure
 - 4. Parent-youth conflicts
 - 5. Adolescent sexuality concerns
 - 6. Physical abuse
 - 7. Depression
 - 8. Suicide gesture (suicide act)
 - 9. Anorexia nervosa
 - 10. Juvenile delinquency
 - 11. Personality trait disorder
 - 12. Psychosomatic illness
 - 13. Hyperventilation
 - 14. Running away
 - 15. Other psychiatric illness
 - 16. Functional symptoms (headache, abdominal pain, etc.)
- B. Medical Disorders or Concerns
 - 1. Otolgic System
 - a. Otitis media
 - b. Serous otitis media
 - c. Otitis externa
 - d. Hearing deficiency
 - 2. Ophthalmologic System
 - a. Refraction errors (myopia, hyperopia, astigmatism)
 - b. Conjunctivitis
 - c. Chorioretinitis
 - d. Pseudotumor cerebri
 - 3. Respiratory Tract
 - a. Bronchitis (cigarette smoker)
 - b. Tuberculosis
 - c. Asthma
 - d. Cystic fibrosis
 - e. Pneumonia
 - 4. Breast Disorders
 - a. Gynecomastia
 - b. Fibrocystic breast disease
 - c. Virginal hypertrophy
 - 5. Cardiac System
 - a. Functional murmurs
 - b. Essential hypertension
 - 6. Gastrointestinal Tract
 - a. Gastroenteritis
 - b. Hepatitis
 - c. Inflammatory bowel disease
 - 7. Genitourinary Tract
 - a. Urinary tract infection
 - b. Sexually transmitted disease
 - c. Enuresis
 - 8. Neurological System
 - a. Headaches (tension, migraine, other)
 - b. Epilepsy
 - 9. Orthopedic Disorders
 - a. Scoliosis
 - b. Slipped capital femoral epiphysis
 - c. Osgood-Schlatter's disease
 - d. Chondromalacia
 - e. Osteoid osteoma
 - f. Arthritis (arthralgia)
 - 10. Endocrine System
 - a. Exogenous obesity
 - b. Diabetes mellitus
 - c. Delayed puberty
 - d. Precocious puberty
 - e. Thyroid disorders
 - 11. Gynecologic Disorders
 - a. Vulvovaginitis
 - b. Menstrual disorders
 - c. Others
 - 12. Oncology
 - a. Osteogenic sarcoma
 - b. Ewing's tumor
 - c. Others
 - 13. Dermatologic System
 - a. Acne vulgaris
 - b. Psoriasis
 - c. Pityriasis rosea
 - d. Verrucae
 - e. Tinea
 - 14. Miscellaneous
 - a. Collagen vascular diseases
 - Juvenile rheumatoid arthritis
 - Systemic lupus erythematosus
 - b. Drug Abuse
 - Subacute bacterial endocarditis
 - Thrombophlebitis
 - Hepatitis
 - c. Chest pain
 - d. Abdominal pain
 - e. Dizziness
 - f. Lethargy

Table 21

medical or psychological disorders themselves can complicate the entire picture — depending on the exact disorder, its severity, what therapeutic modalities are available, and what access the youth has to health care. Some of these disorders are discussed in other parts of this

manual. Also, the reference section points out useful articles that can provide helpful information on many of these problems.

Chronic illness may constitute a very serious block to adolescent growth and development by limiting the youth's self-image and removing the individual's emancipation process (Blum, 1992). When encountering an adolescent with chronic illness, the health care professional should assess the answer to several questions as listed in Table 23. In the opinion of the authors, such assessments are as important as an evaluation of the medical aspects of the identified illness.

Even youth with "minimal" disease can have considerable problems with developmental issues. The concept of marginality states that individuals with well-controlled chronic illnesses such as epilepsy or diabetes mellitus may feel very different from peers. This occurs even when friends aren't aware of the illness.

The chronically ill person with well-controlled disease may resent the fact that special attention is not provided to them, as is usually the case with those having a more uncontrolled disease requiring frequent medical intervention and/or hospitalization. As a result, health care professionals should screen all individuals with chronic illness for developmental problems, even if they appear to have the disease under good control. Of course, certain problems have their own unique difficulties — some of these conditions are listed in Table 24.

COMPLICATING FACTORS OF ADOLESCENT HEALTH CARE

1. Current societal and family unrest
2. Limited socioeconomic status
3. Over-protective or rejecting parents
4. Severe medical complications
5. Major psychological/psychiatric disorders
6. Physical disabilities/chronic illness
7. Harsh peer criticism or unacceptance
8. Intellectual subnormality
9. Sexual dysfunction
10. Emotional unavailability of parent(s)

Table 22

ASSESSMENTS TO MAKE OF TEENAGERS WITH CHRONIC ILLNESS OR DISABILITIES

1. Is the youth being allowed to make his or her own decisions in management of care and other age-appropriate matters?
2. Is there a growing sense of control of his or her life and adequate emancipation from family?
3. Is his or her moodiness due to failure to obtain adequate emancipation or to lack of establishment of identity?
4. Are peer interaction at school and social functions adequate and appropriate? Are friendships made or is the youth a loner; if a loner, is it due to personality or the disease?
5. Is progress being made to establish a sexual identity?
6. Is there a developmental arrest due to the chronic illness?
7. Is the teenager using inappropriate or negative, maladaptive coping mechanisms to adjust to his or her disease?
8. Does the youth responsibly manage his or her own medical needs?

Table 23

Special Problems Faced by the Adolescent With Chronic Illness:

The parents' reaction to adolescent problems, of course, is very important. Youth need the understanding and approval of parents, even during the turbulence of middle adolescence. Parents can react to children's problems by over-protecting or even by rejecting their children. It is a normal desire on the part of parents to produce a perfect child — one who is the best at some or all of the qualities parents find acceptable.

It is especially difficult for parents to allow the medically non-compliant adolescent normal autonomy. Since parents interpret the adolescent's non-compliance as irresponsibility, they are torn between fears of injury and death for the adolescent and the need to allow adolescent freedom and choice. It is therefore difficult for parents to believe that autonomy under such circumstances is a wise choice.

Normally, the birth of a baby gives parents considerable joy and starts them off on a journey of fantasy about the wonderful things that the child may do, which makes them feel very proud. Some parents even live their lives and dreams through their children. Unfortunately, children (whether chronically ill or not) may not live up to such expectations. Many parents eventually accept this fact and learn to love children in a realistic manner. As Tagore in the *Crescent Moon* states, "I do not love him (the child) because he is good, but because he is my little child." Most parents realize that their children are simply reflections of themselves and thus perfection is impossible.

However, some parents develop guilt over producing a child with problems and then seek to protect this child from life's many potential difficulties. Such over-protection can force the child to become too dependent on parents and not go through the necessary pains of adolescence. Chronic illness itself (including physical disabilities) can limit the emancipation process in youth, and over-protective parents can worsen this negative trend. Parents may unconsciously or consciously seek to prevent the youth from growing up; this can be especially true if this is the last child in the home and the parents have no other interests. Some individuals have called this the "empty nest syndrome."

Youth with physical disabilities may develop very low self-esteem, have limited access to other peers, and have parents who actively or passively limit their needed emancipation process. On the other hand, parents who find

SITUATIONS RESULTING IN A MORE DIFFICULT ADOLESCENCE

1. Spinal-cord injury or other major accident complications
2. Chronic illness with recurrent hospitalizations
3. Drug abuse
4. Cancer
5. Urogenital anomaly
6. Disruptive behavior disorders (such as conduct disorder, attention-deficit/hyperactivity disorder)
7. Severe depression and suicidal impulses
8. Dying youth
9. Pregnancy and abortion
10. Mental subnormality
11. Homosexuality
12. Family history of divorce, remarriage, drug abuse, prison, sexual abuse, physical abuse, or inconsistent discipline (harsh and then lenient)

Table 24

their children imperfect may also reject them, either subtly or overtly. Such rejection can severely limit the child's development of a stable identity. The bond of a child with his/her natural parent is a very strong one and like no other in the child's world. If this bond is broken through death, divorce or excessive parental criticism, the youth has a major road-block to overcome in his/her quest for stable adulthood. Problems of adolescence can often, in part, be traced to such rejection.

Likewise, rejection by peers can pose another major hurdle for some youth, especially youth with chronic illness, and mental or physical handicaps. The individual who has a poor self-image becomes easy prey for peers who often look to criticize others so that they themselves can avoid such damaging criticism. Very few individuals can happily receive unacceptance or harsh criticism by peers. Groups

are important to children, adolescents and adults. General acceptance by one's own peers is vital to inner stability. The adolescent with special problems may not have access to this general acceptance.

Every school society has a minority of students who are not accepted by their peers. Frequently, the adults in such individuals' lives ignore this serious problem. The effect of such rejection can simply not be underestimated in its massive negative effect on adolescent development. There are many youth who could positively benefit from social skills training. Providing parents with parenting skills and youth with social skills are two important tasks health care professionals can provide to readily improve the current problems of youth.

Social skills training is essential to chronically ill or disabled adolescents because they may not have had the opportunities to learn them. Their parents may also ignore adolescent sexuality and normal adolescent sexual behavior. The lack of access to age-appropriate peers and privacy poses special problems for some disabled individuals and requires attention. The health care provider can help educate parents in this regard.

Mentally challenged youth represent a special subgroup of adolescents with complicating adolescent health care issues. Mental retardation or borderline intellectual functioning is defined as subnormal general intellectual functioning and usually is applied to individuals with an IQ score under 70. Adolescents with significant deficits in adaptive functioning and who have obtained IQ scores below 75 are also considered subaverage. About three percent of the population have a significant intellectual deficit. This includes over 1.2 million American teenagers, with another 100,000 such individuals being born each year (Greydanus, 1991).

Approximately 80% of mentally retarded youth obtain IQ scores (50 - 75) that fall in the mildly mentally retarded range. These young people can be educated and have the potential for literacy. They can hold unskilled or semi-skilled jobs. Though often limited to preoperational or concrete operational Piagetian thinking levels, they go through the main psychosocial stages as their peers do who have normal intellectual functioning. Young people diagnosed with mild mental retardation are often painfully aware of their limitations and may have difficulties

emancipating from parents and in establishing a secure self-image. They have the same need for development of sexuality as their "normal" peers, but society is often unwilling and unable to accept such a concept. Health care professionals should address the sexuality and vocational needs of mildly retarded adolescent patients/clients.

About 12% of mentally retarded youth have obtained IQ scores in the moderately mentally retarded range (25 - 50). They are trainable individuals who can be instructed in self-care, appropriate socialization and basic verbal communication. They can perform simple chores but usually remain with family or live in a residential facility. Families who keep them at home usually need guidance in maximizing their potential without negatively impacting others in the home. Finally, those individuals with IQ scores under 25 (severe or profound range) are usually totally dependent on others and may be institutionalized in some states.

The final complicating factor to be discussed (though the reader can certainly add others) is sexual dysfunction. Young people must often go through their important sexual development with access to minimal sexuality information. Thus, they often develop sexual dysfunction. Their ignorance of sex information often results in resistance to receiving information, as noted in the refusal of most teenage boys to contribute to contraceptive responsibility when engaging in coitus with a partner(s). Often, the only group resisting sex education for youth more than teenagers is their parents. The result is often high rates of adolescent pregnancy as well as sexually transmitted diseases.

Other results include coitally-active young people with limited sexual potential. They often have such sexual dysfunctions as impotence, ejaculation disorders (premature, retrograde or retarded), dyspareunia and/or orgasmic dysfunction. The unfortunate result of this adolescent sexual dysfunction is that such problems continue on into adulthood and partially explain the high prevalence of sexual dysfunction described in adults. Pelvic examination for adolescent females should be seen as both an important educational device and as a method to detect disorders. The young female's first (and subsequent) pelvic examination should be as positive an experience as possible.

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The parents' reaction to adolescent problems, of course, is very important. Youth need the understanding and approval of parents, even during the turbulence of middle adolescence. Parents can react to children's problems by over-protecting or even by rejecting their children. It is a normal desire on the part of parents to produce a perfect child — one who is the best at some or all of the qualities parents find acceptable.

It is especially difficult for parents to allow the medically non-compliant adolescent normal autonomy. Since parents interpret the adolescent's non-compliance as irresponsibility, they are torn between fears of injury and death for the adolescent and the need to allow adolescent freedom and choice. It is therefore difficult for parents to believe that autonomy under such circumstances is a wise choice.

Normally, the birth of a baby gives parents considerable joy and starts them off on a journey of fantasy about the wonderful things that the child may do, which makes them feel very proud. Some parents even live their lives and dreams through their children. Unfortunately, children (whether chronically ill or not) may not live up to such expectations. Many parents eventually accept this fact and learn to love children in a realistic manner. As Tagore in the *Crescent Moon* states, "I do not love him (the child) because he is good, but because he is my little child." Most parents realize that their children are simply reflections of themselves and thus perfection is impossible.

However, some parents develop guilt over producing a child with problems and then seek to protect this child from life's many potential difficulties. Such over-protection can force the child to become too dependent on parents and not go through the necessary pains of adolescence. Chronic illness itself (including physical disabilities) can limit the emancipation process in youth, and over-protective parents can worsen this negative trend. Parents may unconsciously or consciously seek to prevent the youth from growing up; this can be especially true if this is the last child in the home and the parents have no other interests. Some individuals have called this the "empty nest syndrome."

Youth with physical disabilities may develop very low self-esteem, have limited access to other peers, and have parents who actively or passively limit their needed emancipation process. On the other hand, parents who find

SITUATIONS RESULTING IN A MORE DIFFICULT ADOLESCENCE

1. **Spinal-cord injury or other major accident complications**
2. **Chronic illness with recurrent hospitalizations**
3. **Drug abuse**
4. **Cancer**
5. **Urogenital anomaly**
6. **Disruptive behavior disorders (such as conduct disorder, attention-deficit/hyperactivity disorder)**
7. **Severe depression and suicidal impulses**
8. **Dying youth**
9. **Pregnancy and abortion**
10. **Mental subnormality**
11. **Homosexuality**
12. **Family history of divorce, remarriage, drug abuse, prison, sexual abuse, physical abuse, or inconsistent discipline (harsh and then lenient)**

Table 24

their children imperfect may also reject them, either subtly or overtly. Such rejection can severely limit the child's development of a stable identity. The bond of a child with his/her natural parent is a very strong one and like no other in the child's world. If this bond is broken through death, divorce or excessive parental criticism, the youth has a major road-block to overcome in his/her quest for stable adulthood. Problems of adolescence can often, in part, be traced to such rejection.

Likewise, rejection by peers can pose another major hurdle for some youth, especially youth with chronic illness, and mental or physical handicaps. The individual who has a poor self-image becomes easy prey for peers who often look to criticize others so that they themselves can avoid such damaging criticism. Very few individuals can happily receive unacceptance or harsh criticism by peers. Groups

are important to children, adolescents and adults. General acceptance by one's own peers is vital to inner stability. The adolescent with special problems may not have access to this general acceptance.

Every school society has a minority of students who are not accepted by their peers. Frequently, the adults in such individuals' lives ignore this serious problem. The effect of such rejection can simply not be underestimated in its massive negative effect on adolescent development. There are many youth who could positively benefit from social skills training. Providing parents with parenting skills and youth with social skills are two important tasks health care professionals can provide to readily improve the current problems of youth.

Social skills training is essential to chronically ill or disabled adolescents because they may not have had the opportunities to learn them. Their parents may also ignore adolescent sexuality and normal adolescent sexual behavior. The lack of access to age-appropriate peers and privacy poses special problems for some disabled individuals and requires attention. The health care provider can help educate parents in this regard.

Mentally challenged youth represent a special subgroup of adolescents with complicating adolescent health care issues. Mental retardation or borderline intellectual functioning is defined as subnormal general intellectual functioning and usually is applied to individuals with an IQ score under 70. Adolescents with significant deficits in adaptive functioning and who have obtained IQ scores below 75 are also considered subaverage. About three percent of the population have a significant intellectual deficit. This includes over 1.2 million American teenagers, with another 100,000 such individuals being born each year (Greydanus, 1991).

Approximately 80% of mentally retarded youth obtain IQ scores (50 - 75) that fall in the mildly mentally retarded range. These young people can be educated and have the potential for literacy. They can hold unskilled or semi-skilled jobs. Though often limited to preoperational or concrete operational Piagetian thinking levels, they go through the main psychosocial stages as their peers do who have normal intellectual functioning. Young people diagnosed with mild mental retardation are often painfully aware of their limitations and may have difficulties

emancipating from parents and in establishing a secure self-image. They have the same need for development of sexuality as their "normal" peers, but society is often unwilling and unable to accept such a concept. Health care professionals should address the sexuality and vocational needs of mildly retarded adolescent patients/clients.

About 12% of mentally retarded youth have obtained IQ scores in the moderately mentally retarded range (25 - 50). They are trainable individuals who can be instructed in self-care, appropriate socialization and basic verbal communication. They can perform simple chores but usually remain with family or live in a residential facility. Families who keep them at home usually need guidance in maximizing their potential without negatively impacting others in the home. Finally, those individuals with IQ scores under 25 (severe or profound range) are usually totally dependent on others and may be institutionalized in some states.

The final complicating factor to be discussed (though the reader can certainly add others) is sexual dysfunction. Young people must often go through their important sexual development with access to minimal sexuality information. Thus, they often develop sexual dysfunction. Their ignorance of sex information often results in resistance to receiving information, as noted in the refusal of most teenage boys to contribute to contraceptive responsibility when engaging in coitus with a partner(s). Often, the only group resisting sex education for youth more than teenagers is their parents. The result is often high rates of adolescent pregnancy as well as sexually transmitted diseases.

Other results include coitally-active young people with limited sexual potential. They often have such sexual dysfunctions as impotence, ejaculation disorders (premature, retrograde or retarded), dyspareunia and/or orgasmic dysfunction. The unfortunate result of this adolescent sexual dysfunction is that such problems continue on into adulthood and partially explain the high prevalence of sexual dysfunction described in adults. Pelvic examination for adolescent females should be seen as both an important educational device and as a method to detect disorders. The young female's first (and subsequent) pelvic examination should be as positive an experience as possible.

Demography of Adolescent Morbidity and Mortality

Many adolescents die each year or are injured from preventable causes (Petersen, Richmond and Leffert, 1993). There are over 40 million adolescents (ages 10 - 19) in the United States with a projected number of over 54 million by the beginning of the 21st century. In 1974, the number of youth ages 12 - 17 years was 25 million; in 1990 this was about 19.2 million and will be 22.1 million in 1999 (U.S. DHHS, 1989).

As already reviewed, young people have special health care needs, with some representing more risk for health problems than others. A major cause of disability among 10-to-18-year-olds results from mental disorders. Approximately 25% of adolescents are at risk for developing psychosocial and physical health problems. If health care professionals adopt a broad view of health care principles, they will see considerable adolescent morbidity and mortality as seen below (Hofman and Greydanus, 1989; 1997):

1. Approximately 10% of young people have hypertension, recurrent migraine headaches, severe dysmenorrhea, exogenous obesity or some other disorder. Recent studies implicate that 25% of adolescent females have an eating disorder, whether bulimia, anorexia nervosa or exogenous obesity.
2. Approximately 80% or more of young people develop acne vulgaris, and the majority have dental problems, particularly dental caries. Estimates are that the average 15 - year - old youth has 10 "diseased" teeth (decayed, filled or missing).
3. About 12% of youth (five million) have a chronic illness or handicap which can result in behavioral problems that affect adolescent growth and development. Approximately 84% of children with severe illness now reach age 20 (Gortmaker, 1984).

Demographic information on specific illnesses include such statistics as:

- a million teenagers with epilepsy;
- over a million with asthma;
- 100,000 with diabetes mellitus;
- 100,000 with partial or limited vision; eight million with refractive errors (myopia, hyperopia or astigmatism);

- over a million with significant hearing loss.

Recent data note that 31% of children under age 18, or 20 million individuals, have one or more chronic conditions. Seventy percent of them have one chronic condition, 21% have two, and nine percent have three or more chronic conditions (Newacheck, 1992). The overall prevalence in the 10 - 17 age group is 315/1,000. Prevalence rates for youth ages 10 - 17 from 1988 data include 20.0 per 1,000 for musculoskeletal disorders; asthma — 46.8; headaches (frequent, severe) — 48.8; heart disease — 17.4; deafness and hearing loss — 17.0; blindness and vision impairment — 16.0; speech defects — 18.9; and diabetes — 1.5 (Newacheck and Taylor, 1992).

4. As previously noted, there are over a million adolescents with mental retardation, most of whom have cognitive deficits in the mild range.
5. Risk taking is commonplace in adolescence. Unfortunately, the results may be tragic. Clinicians should make every effort to educate patients and communities about specific behaviors that have especially significant tolls. The following list contains few if any surprises, but is critical to review with patients and families.
 - A. Many adolescents experiment with substances. Alcohol is the drug most frequently sampled. Alcohol remains immensely popular; its association with vehicular deaths is well known.
 - B. A significant number of adolescents try marijuana and cigarettes. Approximately 6 - 8% of youths smoke marijuana daily. Eleven percent of adolescent males versus 13% of adolescent females regularly smoke 10 or more cigarettes a day. Marijuana use more than doubled among eighth graders between 1991 and 1994 (Wilson, *JAMA*, 1995).
 - C. About one in four high school seniors smokes cigarettes daily. Many anticipate they will stop; few actually do so. Efforts at smoking prevention

should begin in grade school (or earlier); cessation success rates are disappointing. Cigarette smoking alone translates to over 300,000 premature cigarette-related deaths each year in the adult population. Smoking remains the largest cause of preventable premature morbidity and mortality in adults.

- D. Cocaine use tapered off during the end of the last decade, but widespread use is still common. Inexperience, variable potency and idiosyncratic reactions (including cardiac arrest) make this drug particularly dangerous. Other illicit drugs, including heroin, are particularly prevalent in urban centers. The exchange of sex for drugs places adolescents at particular risk for multiple adverse sequelae.
 - E. Unfortunately, millions of youth abuse other drugs as well, such as barbiturates, amphetamines, narcotics, hallucinogens and others (Kaminer, 1994).
6. Significant preventable morbidity and mortality are attributable to other high-risk behaviors. Failure to operate a motor vehicle properly (speeding, inexperience), unsafe swimming and diving (particularly with concurrent alcohol use), and failure to wear bicycle or motorcycle helmets are but a few of many relevant examples. Health care professionals should continue with preventive guidance when giving exams for children.
 7. School dysfunction is a major problem for young people as well. Various studies of urban students indicate that up to 10% of enrolled youth are always absent from school, up to 30% are absent on any given day, and as many as 2% of 14 - 15 year olds simply drop out of school. School phobia is estimated at 17 per 1,000 school age children. The severe negative effects of such school failure on the future of these unfortunate individuals, and on society at large, is incalculable — especially in an ever-increasing technical world.
 8. There are other situations that may place adolescents at increased risk. Teens with chronic illness (particularly in the final stages) often have unique needs. Family dysfunction, including past parental divorce(s), poverty, homelessness, and inadequate access to care all may have adverse effects. Attention to the uniqueness of certain situations may help the clinician anticipate, and by that, potentially limit subsequent problems.
 9. Juvenile delinquency compounds school dysfunction problems. Current figures show that youth under age 19 may commit 40% of serious crimes and those up to age 21 may commit close to 60%. Juvenile court records show that one of every nine adolescents (one of every six adolescent males) is referred to these courts and over 500,000 youth are in some type of jail situation. Juvenile arrest totals rose to over 1.7 million in 1990, as collected by the Federal Bureau of Investigation. Of these cases, 64,740 were linked to drug abuse (*JAMA*: 267 [16]: 1259, 1992.)
 10. There are an estimated one million young people who run away from home each year; many of them never return home or do so only after a prolonged absence (Farrow, Deisher, Brown, et al., 1992).
 11. Depression appears to be common in youth (Yaylayan, 1992). Self-reported symptoms of depression for 14- and 15-year-olds have been described as 41.7% for males and 47.7% for females (Rutter, 1976). Research reports that 13 - 28% of youth are mildly depressed, 7% are moderately depressed and 1.3% are severely depressed. (Kaplan, 1984).
 12. The 1.2 million adolescent pregnancies that occur annually include 31,000 individuals under age 15, and result in over 400,000 abortions.
 13. There are over three million sexually transmitted disease cases among youth each year. Over 25 percent of gonorrhea cases occur in young people, and 5,000 females are absent from school each day due to this severe infection. In addition, there are over 300,000 cases of pelvic inflammatory disease in young females,

with an estimated 100,000 cases of infertility occurring in sexually active women each decade because of pelvic inflammatory disease. Add to this the unknown thousands of incest and sexual assault cases among young people each year. Together, the negative impact of adolescent sexuality problems is quite serious. The risks of sexually transmitted infections have been briefly discussed earlier. Over 150,000 Americans have died from AIDS. Many of those who died in their twenties were infected during adolescence. The rising incidence of HIV infection, particularly among inner city Blacks and Hispanics, is particularly ominous. As a result, condom use for all sexually active males and females is a mandatory recommendation.

14. Trauma and violence constitute major problems for American youth:
 - A. Fifty-five percent of families with a history of violence have children ages 3 - 17 years. Each year 3.3 million of these children are exposed to violence. There are 2.1 million cases of reported child abuse annually. Reporting increased 63% between 1980 and 1986. Research notes that 25% of 10- to 16-year-old teens reported being victims of violence in 1994 (Finkelhor, 1994). Sex abuse was noted in 13% of females and 7% of males in the eighth and tenth grades (Wilson, 1995).
 - B. Many thousands of adolescents are severely injured in major car accidents. The peak times for such accidents are weekends and late at night. The motor vehicle death rate for youth ages 15 to 24 is nearly double any other age group, except for those over age 75. In 1987, over 5.2 million drivers under age 20 were involved in non-fatal motor vehicle accidents. Adolescents often do not wear car seatbelts and often do not use a light or wear a helmet when bike riding or motorcycling. In the United States, there are over 125,000 paraplegics, many of whom are between the ages of 15 and 24; common causes include motor vehicle accidents and other accidents involving drug use.

MORTALITY

1. Violence accounts for approximately 3/4 of mortality in youths ages 15 - 24 (Rosen, 1990; Earls, 1994). The leading cause of adolescent death is accidents (25,000 per year), most of which are car accidents, and many of which are influenced by drug use. Data suggest that two-thirds of motor vehicle deaths occur in rural America (Ahern; Rosenblatt, Mutel, Baker, 1980).
2. Between 1984 and 1988, mortality from firearms among American teenagers 15 - 19 years of age increased 43%. The mortality rate for Black males more than doubled during this period and was three times the rate of death from natural causes. Firearm homicide rates for Black males were 11 times those of white males. White males were more than twice as likely as Black males to commit suicide with firearms.
3. The second and third leading causes of death for males ages 15-19 are homicide and suicide, and are the third and fourth causes of death for females aged 15-19. Violence-related deaths have increased over the past generation, with a 400% increase in motor vehicle accidents, a 400% increase in homicide rates and a 600% increase in suicide rates. Male teenagers die at a rate two times higher than female adolescents. Mortality rates increased 300% from the 10 - 14 year cohort to the 15 - 19 age cohort — the largest increase of any two consecutive cohorts.
 - A. In general, homicide is more likely to occur in the inner city than suicide, while suicide is more prevalent in suburban America. Each year several thousand (4,000 - 5,000) youth are murdered (14.2 deaths per 100,000 population ages 15 - 24 in 1988 vs. 5.9 per 100,000 in 1960). The 1986 homicide rate for Black male adolescents was 79.2 per 100,000, over five times that of white males (U.S. DHHS, 1989). A nearly equal number (4,000 - 5,000) commit suicide. In 1960, the suicide rate for youth ages 15 - 24 was 5.2 per 100,000. It rose to 8.8 per 100,000 in 1970, to 12.3 in 1980 and to 13.1 in 1986 (U.S. DHHS, 1989). However, it is important to note that statistically while Black males are more likely to die from violent

causes, the majority of adolescents killed are white, do not represent any minority group, and do not live in the inner city.

- B. For every 10 to 30 suicide attempts, one will result in death. Depression appears to be common in youth. Self-reported symptoms of depression for 14- and 15-year-olds have been described as 41.7% for males and 47.7% for females (Rutter, 1976). Other research reports that 13% to 28% of youth are mildly depressed; 7% are moderately depressed; and 1.3% are severely depressed (Kaplan, 1984).
 - C. Cancer has an incidence in youth of over 16 per 100,000 population and constitutes the second leading cause of death in females ages 15-19 and the fourth cause in males ages 15-19.
4. The morbidity and mortality data from farm accidents is limited (American Academy of Pediatrics, 1986). However, it is known that there is increased mortality in rural areas from such injuries as lightning (10:1 rural, urban), machinery (9:1), firearms (7:1), and others (McManus and Newacheck, 1988).

Adolescence and Rural America

"The literature based on rural maternal and child health services is very limited, with the exception of rural perinatal care and setting up rural pediatric and primary care services. Moreover, the literature is often five to ten years out of date and is focused on the organization and delivery of services in the mid-to-late 1970s.... The literature by rural minority status is even more sparse, with the exception of low birth weight and infant mortality information." (McManus and Newacheck, 1988.)

As noted by this quote, specific data on adolescent morbidity and mortality in rural or non-metro regions of the United States is scarce. Some of this limited data will be mentioned in this discussion of health concerns of rural

youth. The data which are available suggest that health issues of urban (metropolitan) youth are similar to rural (non-metro) youth. Many young people in the U.S. struggle with such problems as teenage pregnancy, sexually transmitted diseases (including HIV infection), substance abuse, violence, poverty, family breakups ("dysfunctionality"), limited sexuality education, and other complications. Attempts to identify significant differences in rural versus metro youth often conclude with only striking similarities in these groups.

Part of this phenomenon lies in the concept that all youth deal with similar problems, while part of it is due to difficulty in studying different groups. Studies note that there are over 21 million children under age 19 in rural America and that this represents one third of the rural population. Data also suggest that there are over one million children in rural America with chronic illness and disability — 75% with significant disability or illness (McManus and Newacheck, 1988).

However, what exactly is rural, and who is being studied? The federal government refers to metropolitan areas as being over 50,000 in population and to non-metro areas as those with a population of under 50,000 (McManus; Kutnik). However, there is much overlap in various areas, as different non-metro areas have differing degrees of a "metro mix." Others define rural as being under 25,000 population or being 30 minutes from a population center of over 50,000 (McManus; Kutnik). However, attempts are made to distinguish these two groups by such criteria as small size, low population density, distance from urban resources, and a relatively "undisturbed" environment (American Academy of Pediatrics, 1986).

Despite such confusion, studies in rural or non-metro areas suggest that there are over 21 million individuals under age 21 who have similar health issues as metro individuals. Those living in rural or non-metro areas live in greater poverty (40% of individuals below the poverty line are in rural America), have less access to health care professionals, and are more underinsured than their metro counterparts. Studies suggest that one half of the medically underinsured are in non-metro areas (Ahern), and one in four of rural children are poverty stricken (McManus and Newacheck, 1988).

There also may be more distrust of physicians, leading to a longer duration of symptoms before seeing a physician (and thus greater severity of illness at first presentation), and

more use of local (home) remedies in rural vs. metro areas (American Academy of Pediatrics, 1986). Though minority children represent only 20% of the rural population, poverty (including poor housing and sanitation, poor nutrition and contaminated water) in this group is quite severe. Also, it may be more difficult to seek health care for “sensitive” issues (as sexually related) in rural areas where “everyone knows everyone” (Stern). Thus, delivery of appropriate health care to rural youth remains a serious problem (Stern).

GUIDELINES FOR ADOLESCENT HEALTH MAINTENANCE EXAMINATIONS*

Background

Adolescence is typically perceived as a time of good health. Consequently, health services for adolescents have received little attention. The relative paucity of interactions between practitioners and teens reinforces the misconception that adolescents do not benefit (or require) routine medical visits. Furthermore, the wide publicity of what many believe are “typical adolescent problems” such as drug abuse, sexually transmitted diseases (STDs), teenage pregnancy, etc., further polarizes the dichotomy between perceived adolescent needs and potentially beneficial health maintenance visits.

To be effective, health services must be adaptable to the adolescent spectrum. While it is not necessary for each system to provide care for all situations, a working knowledge of the demographic, cultural, socioeconomic, developmental, ethnorracial, and attitudinal characteristics of adolescents is clearly beneficial.

Adolescents are typically cared for in ambulatory settings. Primary care facilities are varied and include community-based centers, school programs (secondary and college), hospital clinics, emergency departments (including walk-in clinics), school locker rooms, and the private offices of pediatricians, adolescent specialists, internists, family physicians, general practitioners, surgeons, physician assistants and others. Complex problems may require referral to secondary or tertiary centers.

Because adolescent health care is a continuum, responsive resources are necessary to meet the needs of individual circumstances. Diagnostic services for confirmation of medical problems are typically readily accessible, but inpatient environments that are appropriate for adolescents may be more difficult to obtain. Most

communities have social services, but they are frequently overburdened with lengthy waiting lists.

Similarly, mental health services, particularly for the underinsured, are often difficult to obtain. Troubled teens may not be comfortable contacting physician offices and/or may not be able to discuss problems with their parents, but instead, seek help through other sources. Adolescents in crises frequently turn to specialized centers following domestic violence, sexual abuse/rape, addiction, and pregnancy. Similar centers are available for mental health crises. Health care professionals should be aware of local, regional, and national centers and hotlines. These numbers should be readily available within these offices and in the community.

Environment

The ideal location for health maintenance visits is the office of a clinician who has an established relationship with the patient. Many adolescents, however, have not been recent participants in the health care system and frequently present as “new” patients. Some are uncomfortable in physician offices; anxiety over “sensitive” problems and concerns (perceived or real) may be enhanced by waiting areas designed for younger (or older) patients. If possible, primary care physicians should have dedicated adolescent areas (either separate from or within the main waiting room) with age appropriate literature and resources. Questionnaires specific to the adolescent are widely available and may be completed in the waiting area.

Periodicity and the Sports Physical

Recommendations for a minimum acceptable frequency of a complete examination is once every two years. The multiplicity of problems that are encountered by the adolescent (psychosocial, school, etc.) favor more frequent visits when possible. Most schools require annual sports pre-participation examinations (SPE) for athletes. The SPE is not an acceptable substitute for the biennial health maintenance visit, though studies have suggested that 80 - 90% of adolescents consider the preparticipation exam as an appropriate alternative. Properly done SPEs include a detailed, though not necessarily exhaustive, history and review of systems. Seventy percent of orthopedic and medical conditions resulting in disqualification are identified in the medical history. Exams should be done in a physician’s office or by station teams — not in a “locker

*These guidelines were prepared by Donald E. Greydanus, M.D., John Rowlett, M.D., and Dilip Patel, M.D.

developmental drives of most youth are toward positive mental health, and which recognizes that every adolescent has strengths and weaknesses. Strengths should be identified in the patient that support positive adaptation and which inhibit maladaptation. This approach to counseling seeks to improve the adolescent's self-esteem, self-control, and self-responsibility. Additionally, it evaluates and assists the youth's important adolescent processes of emancipation and identity formation.

Begin each contact with an adolescent by attempting to establish rapport (see Table 26). While establishing a counseling relationship, remember first impressions can set the tone for future interactions. The health care professional's attitude toward the adolescent and parent(s) is very important. A genuine attitude of concern should be conveyed. Once rapport is established, the communications process can begin.

Active Listening as a Communications Tool

Communicating effectively is an essential skill for the health care professional (HCP). Listening is the key to counseling. Most adolescents know what they want to do, but may lack the skills to communicate effectively with their parents or other adults to get their needs met. When they present in the HCP's office, they want to be heard. Adolescents are rarely asking adults to resolve their problems, but to hear them out and to help them sort out the issues. They want to make their own decisions. Active listening is an important tool to help reach that goal (See Table 27).

Active listening uses techniques that allow the listener to "hear" what the speaker is saying. The active listener attends to body language, tone, inflection of the voice, facial features, positioning of the speaker's body, rate of speech, and volume of the speaker's voice. The active listener sizes

TYPES OF COUNSELING SERVICES

1. PROBLEM IDENTIFICATION AND REFERRAL

- A. Obtain complete history; gather relevant data to determine the scope of the problem, its intensity and duration, impact on adaptive functioning and impact on physical functioning.
- B. Once above data is analyzed, appropriate referrals are made to mental health professionals.
- C. Do follow-up and re-evaluation within 30 days.

2. PROBLEM IDENTIFICATION AND EDUCATION

- A. Same as 1. A. above.
- B. Once above data is analyzed, select appropriate educational materials; give adolescent information orally and in written form. Engage in discussion to ensure comprehension.
- C. Same as above. May give post card to record progress, chart, or use phone contact.
- D. Booster session to problem-solve obstacles.

3. PROBLEM IDENTIFICATION, EDUCATION, AND SKILL BUILDING

- A. Same as 2. A. above.
- B. Same as in 2. B.
- C. Provide educational materials; discuss; provide pen and pencil exercises; do role playing; be a supportive listener; and do follow up sessions as in 2. C. and 2. D. over a specific number of sessions.
- D. Follow-up session at 30 days, three months, and six months.

4. PROBLEM IDENTIFICATION, SUPPORTIVE LISTENING AND RECOMMENDATIONS

- A. Same as 1. A. above.
- B. Same as 2. B. above.
- C. Listen without comment or judgment; validate concerns and allow to vent, giving minimal input; explore options generated by adolescent; suggest several appropriate options from adolescent list.
- D. Same as 2. D

Table 25

up the situation so that the spoken word is placed into context with the environment and current status of the situation. The active listener allows the speaker to talk uninterrupted, maintains eye contact, sits, or stands with arms at one's side and with open hands.

The active listener is aware of his or her body language. Hands may be at the listener's side or lying flat on the thighs, chair arms, table, etc. Feet are placed flat on the floor — no crossing of legs or ankles. The trunk of the body is either perpendicular to the hips or at a 10 to 30 degree angle toward the speaker. The eyes and head are oriented towards the speaker. The face is relaxed. Smiles are used at appropriate times; frowns and scowls are absent. The active listener is sitting or standing about three feet from the speaker; closer proximity is only ventured when necessary. This allows the listener to respect the speaker's personal space. Though these suggestions may seem ridiculous, the described body posture of the listener communicates openness and receptiveness to the speaker. Try it.

The active listener makes sure that he or she clearly heard what the adolescent said. This is accomplished by repeating the adolescent's problem statements back to him or her. An example: Robert is a 15-year-old male who came into the office complaining of headaches and an upset stomach. As a part of the routine exam, the HCP asked Robert how things were going in his life.

Robert replies, "Fine."

However, the astute HCP notices that the tone of the spoken "fine" was flat, and Robert looked at the floor while

he talked. The HCP queries further about the adolescent's relationship with his parent(s) individually, peers, and teachers.

Robert replies, "Well, my dad and I aren't getting along right now."

The HCP simply listens.

"I can't seem to do anything to please him anymore."

The HCP then asks an open-ended question, "When did your relationship with your dad change?"

Robert replies, "After he caught me lying about something."

The HCP uses reflective listening and says, "Now, let me make sure I have this right. Your dad caught you lying and it had a very bad effect on your relationship with him."

Robert replies, "No, not exactly; we never really have gotten along, but my mom started school and she's not there now to help me out. He and I have never been able to talk. He just doesn't listen. I hate him. He just doesn't seem to care."

By restating the problem, the HCP gained access to valuable clarification and a more complete problem statement. The HCP effectively employed active listening, asked open-ended questions instead of yes/no questions, and obtained information about onset and duration of the problem. Problem resolution is usually not the goal of a first session. The HCP might end the session by referring the adolescent to a person on staff to further explore the problem or may reschedule an appointment to discuss possible solutions.

ESTABLISHING RAPPORT

- 1. Introduce yourself. Shake hands. Make eye contact. Smile. Use a firm but gentle hand shake. Greet each person in the room individually.**
- 2. Explain the sequence of events for your interaction. Tell the adolescent what's going to happen.**
- 3. Present a pleasant and accepting demeanor.**
- 4. Monitor your body language. A stern, "parental" look on the face, crossed arms, or very close physical proximity may communicate negative non-verbal messages.**
- 5. Use active listening and ask open-ended questions.**
- 6. Remain non-judgmental.**

Table 26

Closure of the current session might go like this, “Robert, thanks for being so open with me. I’d like you to consider coming back to see me in one week to discuss how you are going to manage this situation. In the mean time, please keep a journal of your feelings and thoughts. Write in that journal what happened between you and your dad, how you felt about what happened and what you did about it. If you get too upset, call my office and I will work you in. Can you do that?”

Robert: “I don’t know, but I’ll try. What number do I use to call you if I have a problem?”

The HCP needs to remember that most presenting problems are based on long-standing problems with communication, negotiation, problem-solving, and inter-parental conflict. Rarely will teens be able to articulate this assumption. But if the HCP accepts this assumption, he or

she will feel less pressure to offer immediate solutions and will be better able to become comfortable in addressing a small portion of the problem.

Referring Elsewhere

A professional attitude of genuine concern and comfort is best. If the health care professional must rush the patient or if thoughts are centered only on financials areas, refer the youth elsewhere. Arrange the length of an appointment to allow more than 10 minutes to examine an adolescent. Keep the welfare of the patient in mind at all times.

Don’t be afraid to refer to other health care professionals who have more training to deal with specific problems which have been identified. The health care professional must realize that he or she cannot solve all

STEPS TO EFFECTIVE LISTENING FOR THE HEALTH CARE PROFESSIONAL

1. Listen

Listen carefully. Most people are terrible listeners. Not everything is heard or heard correctly and sometimes the listener thinks he or she has heard more than what was actually said. Paying careful attention to what the adolescent is saying is essential. Avoid distractions or interruptions. Give the adolescent your undivided attention.

Listen objectively. Try to keep an open mind. This is not easy to do. It takes discipline to give others the opportunity to state how they view the issues and to relate their feelings.

2. Clarify

Clarify the problem statement by repeating the problem back to the adolescent.

Avoid selective listening — repeat what was said so the other person can make corrections or clarifications.

Avoid imaginary listening — sometimes listeners provide a meaning different from the intention of the speaker because he or she was distracted by the speaker’s non-verbal statements. Another distraction might be the listener’s personal beliefs or emotional status at the time of the interview.

Note: Sometimes adolescents won’t tell the HCP everything. They may hold back, evade certain issues, and sidestep certain facts. They may shun, dodge or shake off certain concepts. Keep an open mind – the adolescent may not be telling the whole story. This doesn’t mean it isn’t the truth, but it is one person’s perception of the truth

3. Ask

Ask the adolescent how he/she thinks the problem can be resolved.

4. Encourage

Ask the adolescent to call the office and report results.

Table 27

problems. Attempting to counsel an adolescent for problems not in the HCP's expertise may result in the risk of litigation. Ethical guidelines of psychologists and social workers require them to refer to other professionals any problems for which they have not received previous training. Once a therapeutic relationship has been established, the health care professional is responsible to do his/her best to provide effective treatment. It is unethical to terminate treatment or "drop" patients without regard for problem identification and resolution. Once treatment has begun, it is not acceptable to terminate because the patient is unable to pay. Arrangements must be made to continue treatment.

Giving Recommendations

Always clearly state that recommendations are simply that — recommendations. Explain that any advice you provide must be processed by the patient and his or her parent(s). If the patient or family does not follow advice, consider a different strategy. If they seem to lose confidence in the HCP or if the health care professional runs out of ways to help them, refer them to others. Don't just send them off, but refer them to specific treatment sources. Offer to forward records (with properly executed, signed releases of information) and summaries to the referral sources to ease the transition.

Don't become embarrassed when other health care professionals succeed in handling a difficult case. The positive result is most often due to a cumulative effect of all the therapy the individual has received. The main goal is to improve the individual's difficulties. Don't always expect immediate rewards from counseling or expect that the patient will automatically thank you. Sometimes the individual is not able to immediately benefit from the advice. The health care professional must seek to assess whether or not the patient is ready and able to make behavioral and cognitive change.

Health care professionals should carefully examine their own attitudes to see if they are sufficiently positive to help young patients, and should try to develop an office environment which is reflective of the needs of teenagers. If an office mainly reflects pediatric or geriatric care, give some thought to modifications. Set up special office hours to see youth, add a few wall decorations with themes suggestive of adolescence, and add some brochures on adolescent problems. If the waiting room is filled with

crying babies, the health care professional will be labeled a "baby doctor" and the teenager may be less likely to immediately respect the professional's expertise and will require more work to overcome any resentment. Youth want to be treated as "special" individuals just as adults do.

Confidentiality

Health care professionals who deal with adolescents are presented with unique challenges and responsibilities. A delicate balance must be struck between youth and parents. Early adolescents generally want more direct parental involvement in the physician-patient relationship while middle and late adolescents generally seek much greater autonomy. Trying to effectively deal with the patient and his/her parent(s) can be difficult at best, especially if various complicating factors arise. Encourage young people to talk with their parents openly, and provide them with examples of how to talk to their parents.

The adolescent must be given some sense of confidentiality and feel that the health care professional is not merely an unfiltered conduit of information from the youth to the parent. Patients must be given some reassurance that what they say will be held in acceptable confidence. However, the youth must realize that there are some limits to this aspect.

Federal and state laws specify what information must be reported to parent(s) and police departments. For example, individuals who are severely depressed and threatening suicide or those presenting with a risk of physical harm to others must not be allowed to go untreated and unchecked. Sexual or physical abuse of a minor is also an area governed by legal mandates. Clinical judgment is necessary in deciding who to tell and how to handle such problems. Specific documentation of such situations must be kept in the patient's file. In some states, there are legal mandates specifying who must be notified and in what time frame.

In the mental health arena, attempts to handle problems beyond one's training level are just as serious as providing medical treatment in an untrained area. This can be a challenge. Some health care professionals prefer simple issues such as dealing with pill prescriptions or surgical techniques. Those who deal with delicate counseling issues learn quickly that many problems are not easily solved through medication or surgery.

Dysfunctional Families vs. Functional Assessment

Although counseling is not psychotherapy, it does require the use of therapeutic strategies to have a positive impact on the adolescent.

Conceptualizing How Families Function: If families with problem teens are viewed as dysfunctional families, it may seem that the parents and children are somehow not meeting a definition of “family.” Since each of us has a unique notion of what constitutes “family” and how families should operate, it may be a disservice to adolescents to use personal notions as the measuring stick for what is appropriate or inappropriate family function. It might be useful to think of the presenting problems in terms of individual sets of behaviors that have undesirable outcomes for various members of a family.

Often the impact of undesirable outcomes is experienced by each family member, although only the parents may be defining issues as problems. Even when a teen is seen by the parent(s) as the root of the “problem,” the family frequently have their own defined “problems.” The teen may respond to these problems by engaging in behaviors that force the parents to produce the desired outcome. For example:

Problem: Family members say that the teen is drinking and the parents want the teen to stop drinking.

Functional Analysis: The teen drinks. When the teen drinks and the parents find out, all of the family’s attention is directed toward the teen. Prior to the drinking behavior, everyone’s life was very busy and the family had little time to come together and focus on family issues. As a result of drinking, the teen has managed to bring the whole family together to discuss issues related to his or her drinking.

Professional’s Role: Although the focus is not quite on “family issues,” it is on some aspect of family. In this manner, the drinking behavior has functioned as a stimulus for getting the family unit to come together to direct their attention to one issue. It then becomes the role of the health care professional to direct this attention or focus to family issues and how this “togetherness” can occur without the undesirable behavior of

drinking. The HCP might re-direct this teen to explore other ways of “bringing the family together.”

Even in the case of teen abuse, the behavior of the perpetrator may serve a function. Most states have laws dictating contact with families and reporting procedures. It is important to understand what behavioral outcomes are meant to fulfill. This focus allows providing treatment to help parents “behave” in a manner that produces desirable behavior in their teens. Likewise, understanding the function of a teen’s behavior of lying, stealing, or sexual promiscuity is also important to provide treatment and to help the teen discover alternative behaviors to meet those needs.

Looking at extreme behavior, as in the above case, illustrates that a functional approach is a viable approach. Thinking of the problems in terms of individual or group behavior facilitates the HCP’s ability to pinpoint the function of the behavior, and then to generate a strategy to teach new behavior which is designed to produce outcomes that generate the same rewards and meet the same needs as the unwanted behavior once did. This functional approach takes the blame out of treatment. It frees the health care professional from injecting personal bias. Using this approach also allows the parent(s) and teen to identify problems, select behaviors to change, and define desired outcomes. This method of viewing and treating families leaves the control for change with the family and communicates a non-judgmental atmosphere.

Parents of problem teens frequently blame themselves and feel as though they are failures as parents. Therefore, it is important to approach them in a manner that does not reinforce this notion. Viewing family problems as the result of unwanted outcomes from individual and group behavior accentuates the notion that all behavior is functional vs. dysfunctional.

Additionally, approaching the worried parent as a member of a dysfunctional family may set up unnecessary barriers to establishing rapport and resolving problems. If the parents are forced to prove that they are “functional,” they must then place the problem on another family member – the teen. Much energy and time are wasted explaining why the “teen” is dysfunctional. This effort could better be spent working on finding a way that the family can accomplish the goal of raising a “healthy” teenager.

Additional Counseling Issues

Counseling a young person starts with a full psychosocial and physiological assessment of the patient. Knowledge of the youth's various adolescent stages can prove very helpful in determining how to proceed. In general, a careful medical screening is important, along with knowledge of various medical and behavioral disorders of the adolescent. Chronic illness and handicaps pose additional challenges.

Younger adolescents may not be developmentally prepared to relate details of problems while older youth may be reluctant unless a relationship of trust has been established. Issues of anxiety can become problems in such areas as peer interaction, parent-youth relationships, school functioning and sexuality concerns. A good psychosocial and medical history demands a thorough sexual history as well. Sexuality is important to the overall health of youth and should not be ignored. Starting with general issues about boy/girl friends or dating may be followed by more specific inquiries about sexuality. This may lead to important discussions around such topics as masturbation, homosexuality, coital activity, pregnancy, abortion, contraception, sexual abuse and many others. It is certainly not a field for the timid!

Getting to know the patient is very important. Talking about non sexuality related topics at first may be helpful. Show interest in all aspects of the patients health care. General discussions may help the youth better negotiate the stages of adolescence, improve thinking skills, broaden values, encourage better social skills, and prepare for adult roles. Trust is important to develop and can take considerable time.

Sensitive issues such as sexual assault or incest will not be brought up easily. However, even rebellious or frightened youth may honestly talk to an adult health care professional who has established an open, non-judgmental rapport. One needs to remember that general sex education is clearly part of the role of the adolescent's counselor — especially since youth are provided with extreme images and values and little objective information from society in general.

When confronted with difficult situations, the specific problem(s) must be carefully identified, as well as the parties involved with the problems, such as family members, schoolmates, and teachers. Sometimes ventilation about the difficulties can be very therapeutic for

those involved. Discussion of how the involved parties view problem resolution is very important before any detailed plan is possible. If considerable patient or family resistance to treatment is observed, the entire situation becomes considerably complicated.

It can be very frustrating to the health care professional, for example, to deal with a drug-abusing youth when both family and the patient fail to see the seriousness of the problem. Sometimes a counselor must provide correct information about the problem before agreement on treatment is reached. A careful review of treatment options is a major task of the counselor. Once agreement is reached on the chosen option, a plan can be developed to achieve and maintain the desired goals. In general, adolescents do better if they are given as much responsibility for self-care as possible. The counselor can aid the individual in avoiding negative coping skills — such as regression, denial, isolation and/or depression. Working with various treatment disciplines may be necessary to deal with the complex problems of patient and family.

Conducting the Interview

Provide a clear role definition. Try to engage the young person as a therapeutic ally. State that the HCP's job is to help the individual to obtain access to good health care and to maintain a healthy lifestyle. State the rules about confidentiality. It is important to be upfront and to inform the adolescent of the "rules." Explain that questions asked are to help with diagnosis and treatment and are not meant to pry or antagonize. This will avoid problems later regarding trust. Such early efforts should help to convince patients of the HCP's sincerity in attempting to help them.

Don't ask questions unless there is time to listen to the patient's answers. Allow the adolescent to state his or her concerns without interruption. Many HCPs may bring their own previous adolescent issues into the counseling session. The health care professional must always be prepared to deal with issues of countertransference which may arise in a therapeutic setting. The HCP may feel that the youth of today are immoral, unethical, and "worse" than previous generations. However, such views must be set aside; these negative feelings are inappropriate. HCPs must learn to use a neutral, honest, genuine manner and let the patient know that the purpose of the meeting is to help him/her.

Considerable time may be necessary to analyze the youth's behavior, what purpose it is serving, and how it is

and encouraging the adolescent to discuss with his/her partner what sexual activity is off limits. The youth can be assured that abstinence is normal, common and acceptable.

The young person should also be told that condoms are recommended along with other contraceptive methods, such as combined oral contraceptives, injectable contraceptives, and others because condoms increase

contraceptive efficacy and offer some degree of protection from sexually transmitted diseases. Youth should understand the benefits and limitations of the various methods which are available (*Med Lett Dr Ther* 37:9-12, 1995; Davis, *Dialogues in Contraception*, 1995; Sanfilippo, 1994.)

**SUGGESTED PLAN TO EVALUATE
ADOLESCENT FEMALES FOR BIRTH CONTROL PILLS**

I. History

- A. Does the patient need and want contraception?**
- B. Does she understand what methods of contraception are available?**
- C. What is her menstrual history?**
 - 1. Age at menarche?
 - 2. Are menstrual periods regular? For at least 1 year?
 - 3. Date of last menstrual period?
 - 4. Previous pregnancies or abortions?
- D. Does she need or wish additional counseling about sexuality?**
- E. Is she willing to use a barrier method (diaphragm with contraceptive foam or a condom with contraceptive foam)?**
- F. After discussion of the various options, has she chosen the birth control pill? What concerns does she have about birth control pills?**
- G. Will she take these pills on a daily basis?**
- H. Are there absolute contraindications to birth control use? These include:**
 - 1. Thrombophlebitis, thromboembolism, or thrombotic disease
 - 2. Breast cancer
 - 3. Estrogen-producing neoplasia
 - 4. Undiagnosed uterine bleeding
 - 5. Pregnancy
 - 6. Active acute or chronic liver disease

Table 29

**SUGGESTED PLAN TO EVALUATE
ADOLESCENT FEMALES FOR BIRTH CONTROL PILLS (continued)**

I. Are there relative contraindications to birth control use? These include:

1. Hypertension
2. Migraine headaches
3. Hyperlipidemia
4. Sickle cell disease (trait or anemia)
5. Uncontrolled epilepsy
6. Poorly controlled diabetes mellitus
7. Significant chest pain of unknown cause
8. Optic nerve or retinal disease
9. Clotting abnormalities or coagulation defects
10. Melasma or "mask of pregnancy"
11. Collagen vascular disorders
12. Uterine fibroid
13. Lactation
14. Oligomenorrhea
15. Depression
16. Cholelithiasis
17. Inflammatory bowel disease
18. Major organ disease (e.g., heart, lung, or kidney disease)
19. Chorea
20. Porphyria
21. Erythema nodosum
22. Other (acne vulgaris or candidal vaginitis, which may worsen with birth control pill use; use of contact lenses, which may be affected by pill use; use of drugs such as anticonvulsants or antibiotics, which may render the pill less effective, etc.)

II. Complete physical examination with emphasis on the following:

- A. Tanner staging of sexual maturity (should be stage IV or V)
- B. Blood pressure
- C. Eye examination (jaundice, visual defects)
- D. Thyroid examination
- E. Breast examination
- F. Cardiovascular system evaluation
- G. Liver evaluation (size, tenderness, stigmas of hepatitis or chronic liver disease)
- H. Skin evaluation (acne vulgaris, melasma, xanthoma)
- I. Complete pelvic examination

III. Laboratory tests

- A. Hemoglobin/hematocrit and urinalysis (including a microscopic examination)
- B. Liver function tests if liver status is in doubt
- C. Screening for *Neisseria gonorrhoeae* (cervical culture), *Chlamydia trachomatis* (cervical culture), and other sexually transmitted diseases, such as *Treponema pallidum* (RPR),* HIV, and others
- D. Papanicolaou smear
- E. Triglyceride and cholesterol screen if a family history of hyperlipidemia
- F. Other tests as indicated by history and physical examination

Source: Greydanus D. E., McAnarney E. R., *Pediatrics* 65: 6,7, 1980

*Shew and Fortenberry, 1992

Table 29 (continued)

Diabetes Mellitus

Current evidence indicates that diabetes mellitus is a strong, relative contraindication to birth control pill use in teenagers. However, this remains controversial and further studies are needed. There is concern that birth control pill use may worsen diabetes and possibly increase pregnancy-related complications. Alternative methods can be offered, as depomedroxyprogesterone acetate, Norplant, or barrier methods.

Seizure Disorder

Though the pill can worsen existing epilepsy in a particular patient, an adjustment in anti-seizure medication is often therapeutic. A serious problem, however, is that of drug interaction. There may be an anti-convulsant, drug-induced increase in hepatic microsomal enzymes which can produce increased pill metabolism and thus weaken the pill's contraceptive ability. Thus, women on the pill who also take various anti-convulsants are at an increased risk for pregnancy. Further study is needed to determine the significance of this particular risk. The possible teratogenic effect of anti-seizure medications also complicates this problem.

Migraine Headaches

It has been observed for many years that some females develop new or worsening migraines when placed on the pill. The various high-estrogen pills of the 1960s even resulted in anecdotal cerebrovascular accidents and deaths. Current low-estrogen pills have improved this situation considerably. However, caution is still advised when prescribing the birth control pill to an individual with a history of migraine headaches. If the individual has a history of severe migraines or migraines with prolonged auras (as with the hemiplegic or ophthalmoplegic types) the pill should not be given. If the migraine headache and/or the aura worsen while on the pill, it should be stopped immediately. Careful monitoring is advised when placing women with migraines on the pill.

Liver Disorders

It has been clearly written that active liver disease is an absolute contraindication to pill use. A history of hepatitis is

not an absolute contraindication if the liver function tests have returned to normal. The only known birth control pill-associated neoplasm is the hepatic cell adenoma. Estimated annual incidence is 3.4 cases per 100,000 pill users. A variant of this benign tumor is the focal nodular hyperplasia; on rare occasions this can rupture in the liver or peritoneum, causing a syndrome of right upper quadrant mass, abdominal pain, right shoulder pain, and diverse symptomatology associated with acute blood loss.

Cancer

Research over the past 40 years has vigorously sought to identify if there is a link between birth control pill use and cancer (Baird and Glasier, *N Engl J Med*, 328: 1543, 1993). Some studies of the 1980s and 1990s suggest that there is a small subgroup of women on the pill who are at increased risk for breast cancer. Increased risk has been identified with some women who delay their childbearing for several years using an androgen-dominant pill. Clearly, further research is necessary to better identify these issues. The pill is considered safe, but careful medical monitoring is certainly indicated (Greydanus, *Med Clin North Am*, 1990). As noted earlier, there is an association between combined oral contraceptives and benign hepatic adenoma. In the mid-1970s the sequential type of birth control pill was withdrawn from the market because of a possible link to endometrial carcinoma. There is no current evidence linking the birth control pill with cancer of the endometrium, ovary, or pituitary gland. Recent evidence seems to actually indicate a protective effect for ovarian and endometrial cancer.

A 1983 study by Vessey, et. al., indicates the pill is one of several possible contributing factors to cervical cancer. However, cancer of the cervix has many precipitants, including possible association with early "sexarche" (onset of coital activity), many sex partners, herpes simplex infection, condyloma acuminata infection, and others. But because use of the birth control pill may increase the number of partners an individual has, its actual role in the complicated pathogenesis of cervical cancer remains to be clarified. Certainly, one should conclude that individuals on the birth control pill need regular Papanicolaou screening. Also, there is limited evidence that birth control pill use can worsen malignant melanoma — a rare condition in the adolescent.

Miscellaneous

There are numerous other effects of the birth control pill which the clinician may encounter. Such minor but well-known problems as weight gain, *Candida albicans*, vulvovaginitis, or acne vulgaris do not usually require stopping the pill (see Table 31). There is some evidence that the birth control pill may actually have a partially protective effect against gonococcal-induced pelvic inflammatory disease, but the opposite effect for chlamydial-induced pelvic inflammatory disease.

In general, the following conditions preclude pill use: leiomyomata, melasma, erythema nodosum, retinal or optic nerve disorders, estrogen-dependent cancer, history of thromboembolic disease, severe hypertension, hyperlipidemia, cyanotic heart disease, porphyria, chorea, and others. If a "depressed" individual is placed on the pill, she should be carefully monitored to see if the depression worsens. If depression develops or worsens while on the pill, it probably should be stopped.

Some medications (such as sedatives and antibiotics) may interfere with birth control pill effectiveness by increasing pregnancy risk. If the individual becomes pregnant while on the birth control pill, it should be stopped immediately. Most consider the pill to be a "mild" teratogen and abortion is not usually recommended. There are many other conditions which can arise and consultation with available experts or a literature review is advised.

Finally, though the possible complications of the birth control pill must be carefully monitored, it should be remembered that there are many therapeutic effects of the pill as well:

- a. Safe, effective contraception
- b. Treatment for dysmenorrhea
- c. Treatment for anemia secondary to dysfunctional uterine bleeding
- d. Regulation of menses
- e. Lower incidence of ovarian cyst disease and benign breast disease
- f. Partial protection from gonococcal-induced pelvic inflammatory disease
- g. Lower incidence of ectopic pregnancy
- h. Partial cancer protection
- i. Others

The use of low estrogen and low progesterone in contraceptives has reduced pill-associated complications to a major extent. The use of triphasic oral contraceptives has introduced another pill type which offers effective contraception, but as yet unproven, major benefits over the traditional, low-dose "fixed" birth control pill. These pills seek to stimulate a menstrual period by varying the estrogen and progestin ration during a 21-day period. They are safe and effective forms of oral contraception. Examples include Ortho-Novum 7/7/7; Trinorinyl; and Triphasil.

Finally, the progestin-only mini-pill (Micronor, Ovrette, Nor-QD) has been available for many years. It has been used in those individuals having disorders where estrogen may be contraindicated — such as sickle cell anemia, cyanotic heart disease, diabetes mellitus, and others. Some have not recommended the mini-pill for teenagers because of its increased pregnancy rate (one to three pregnancies per 100,000 women years of use versus less than one pregnancy per 100,000 women years for the combined birth control pill), as well as frequent breakthrough bleeding and amenorrhea which is noted in some individuals on the mini-pill.

OTHER CONTRACEPTIVE METHODS

Barrier Methods

These include the diaphragm, cervical cap (Prentif), condom, vaginal spermicides, and the vaginal contraceptive sponge. Most young people do not use these methods; and those who do, often use them ineffectively. Many youth are not prepared to deal so intimately with their own bodies and do not wish to prepare so carefully for each coital encounter. Those at high risk for pregnancy include adolescents who have frequent coitus, females with a history of previous contraceptive failure, those who are ambivalent about pregnancy, and who inconsistently use vaginal barrier contraceptives. However, barrier methods can be effective for motivated adolescents.

Types of diaphragms are outlined in Table 32 and contraindications to diaphragm use in Table 33. The health care professional can easily learn to fit a diaphragm and then give the young female appropriate instructions. The coil-spring or flat-spring diaphragm serves most adolescents well, and 60 - 75 are the usual sizes. The diaphragm is used with vaginal cream or foam and can even be used in

TYPES OF DIAPHRAGMS

Coil-spring diaphragm

A round, spiral-coiled metal wire is inserted in the rim; folds in one plane; well suited for general use.

Flat-spring diaphragm (Mensinga)

Similar to coil-spring diaphragm but firmer; useful in women with anteverted uterus and/or long, posteriorly pointed cervix.

Arching-spring diaphragm (Findley)

Double metal spring in rim; it forms an arc when the rim is compressed; used in women with posteriorly pointed cervix, poor muscle tone, and certain other conditions.

Matrisalus diaphragm (Bowbent)

Strong, flat steel band that is curved and inserted in rim; useful for patients with vaginal-wall relaxation or cystocele.

Source: Greydanus, D. E.; *Pediatric Annals* 9(3): 55, 1980.

Table 32

conjunction with the condom. The condom and vaginal contraceptives can also be an effective contraceptive combination. Table 34 lists the advantages of vaginal contraceptives which include creams, jellies, foams, film and suppositories. Vaginal malodor and allergic reactions are side effects discouraging regular use of vaginal spermicides.

Table 35 lists the advantages of the condom. Youth should be encouraged to utilize latex rubber-type condoms as a potentially good contraceptive which is associated with many other positive qualities (see Table 35), including some STD protection. Health care professionals should present the subject of condoms in a positive light. Unfortunately, most teenage males will not use condoms for reasons outlined in Table 36 (Brown, Diclemente and Park, 1992).

The vaginal contraceptive sponge is another barrier method which seems to be as effective as use of the diaphragm with vaginal contraceptives. It is a polyurethane concave-shaped sponge (*Today*) which is available over the counter and is disposable. It can be inserted up to two days before coitus and left in for 6 to 24 hours after coitus. Reported difficulties include pruritus, vulvar rash, malodor and possibly candidiasis. It has not become popular, and its manufacturer has now stopped producing it, though it may still be available through retail outlets.

CONTRAINDICATIONS TO USE OF THE DIAPHRAGM

- Short anterior vaginal wall**
- Severe retroversion (backward tilting of uterus)**
- Severe anteversion (forward tilting of uterus)**
- Perineal tears**
- Vesicovaginal (or rectovaginal) fistulas**
- Complete uterine prolapse**
- Allergy to rubber or spermicides**

Source: Greydanus, D. E., *Pediatric Annals* 9(3) 59, 1980.

Table 33

Recent concern has been raised linking the diaphragm to urinary tract infections, and linking the diaphragm, as well as the sponge, to toxic shock syndrome. However, these barrier methods are considered safe and effective if knowledgeable health care professionals carefully train motivated adolescents.

In 1988, the Food and Drug Administration approved the Prentif cavity-rim cervical cap, which is a small latex cap (with spermicide added inside), about half the size of a diaphragm. It fits around the cervix by suction and can be used as effectively as a diaphragm. About 25% of women cannot be fitted properly due to only four cap sizes, and some cap users have developed abnormal Pap smears within three months of cap usage. Thus, a Pap smear is taken prior

to, and around three months after starting use of a cervical cap. Contraindications to cervical caps include cervical scarring, cervical laceration and previous toxic shock syndrome. Some patients complain of difficulties inserting and/or removing it and of vaginal malodor.

The female condom is a polyurethane bag or sheath which fits into the vagina prior to coitus (Greydanus, *Med Clin North Am*, 1990). It has been released as an over-the-counter contraceptive which has one size and can offer some sexually-transmitted-disease protection.

<u>ADVANTAGES OF VAGINAL CONTRACEPTIVES</u>
Provides effective contraception, especially if used in conjunction with condom or diaphragm
Couple can share contraceptive responsibility if used in conjunction with condom
No prescription needed
Relatively inexpensive
Few side effects
Serves as a vaginal lubricant to reduce dyspareunia
May provide some protection against STDs because of bactericidal action on <i>Treponema pallidum</i> and <i>Neisseria gonorrhoea</i>
Useful for young women who have only sporadic intercourse
<small>Source: Greydanus, D. E., <i>Pediatric Annals</i> 9(3): 60, 1980.</small>

Table 34

<u>ADVANTAGES OF THE CONDOM AS A CONTRACEPTIVE</u>
Provides effective contraception
No side effects
No prescription needed
Provides some protection against sexually transmitted diseases (including HIV infection, <i>N. gonorrhoea</i>, <i>C. trachomatis</i>, human papilloma virus, herpes simplex virus, others)
May prolong coitus by delaying ejaculation
Allows the male to share in responsibility for contraception
May contribute to reduced incidence of cervical cancer
Many types available
Can assist in relieving dyspareunia
<small>Source: Greydanus, D. E., <i>Pediatric Annals</i>. 9(3): 60, 1980.</small>

Table 35

VULVOVAGINITIS

Introduction

An estrogen effect on the genital tract occurs at puberty. This results in a longer, thicker vagina with a pH in the acidic range (often 5.0 - 5.5). This acidic pH is partially due to the action of lactobacilli on epithelial cell glycogen, causing lactic acid production. This thickened, acidic effect produces some protection against infection and also accounts for the observation that vulvovaginitis in adolescents is “specific” in nature — that is, due to a specific, usually identifiable, agent. With puberty, comes an alteration in the vaginal cell count: approximately 60% superficial cells, 31% intermediate, and 9% parabasal cells (as noted in adults).

The normal vaginal flora contains various microbes: Doderlein’s lactobacilli, Enterobacteriaceae, *Bacteroides fragilis*, *Neisseria sicca*, various staphylococci, streptococci (including group B), various diphtheroids, *Candida albicans*, other yeasts, other anaerobic bacteria, and other microbes. If certain potential pathogens (such as *Trichomonas vaginalis*, *Gardnerella vaginalis*, *Candida albicans*, or *Neisseria gonorrhoeae*) are present, this does not always suggest that a symptomatic infection is occurring. A triggering mechanism, often of unclear causation, may be important to change the presence of an organism into an acute infection with characteristic symptomatology. There are many causes of vulvovaginitis in the adolescent, which can be divided into vaginitis, cervicitis, and vulvitis (see Table 41).

PHYSIOLOGIC LEUKORRHEA

General

This identifies the normal or “physiologic” increase in vaginal discharge (leukorrhea), secondary to estrogen stimulation. It is often described in the first few days or weeks of newborn life and during early adolescence — particularly around menarche. There are numerous causes to this fluid increase, such as fluid transudation through the vaginal wall; stimulation of sebaceous, sweat and Bartholin’s glands, or as mucus secretion of the cervical columnar epithelium. Classically, this secretion starts several weeks or months before the onset of menses and it may cease or reduce at menarche or continue until regular menstruation occurs.

Symptoms and Signs

Variable amounts of leukorrhea develop. It is usually clear, sticky and non-irritating. Some individuals describe an increase during sexual excitement and/or pregnancy.

Diagnostic Procedures

Microscopic study of a vaginal aspirate reveals normal vaginal cytology without leukocytes or pathogenic bacteria. Cultures for bacteria and fungi are usually not indicated and are essentially negative.

Treatment

One should reassure the teenager that this is normal. Some females may feel the discharge suggests a sexually transmitted disease or genital injury. Frequent changes of cotton undergarments will help absorb the discharge, and it should be noted that nylon absorbs poorly. Good perineal

CAUSES OF VULVOVAGINITIS

1. **Leukorrhea and/or vaginitis**
 - a. Physiologic leukorrhea
 - b. *Trichomonas vaginalis* vaginitis
 - c. Bacterial vaginosis
 - d. *Candida albicans* vaginitis

2. **Cervicitis due to**
 - a. *Neisseria gonorrhoeae*
 - b. Herpes simplex virus
 - c. *Chlamydia trachomatis*

3. **Miscellaneous**
 - a. Foreign body vaginitis
 - b. Allergic vulvovaginitis
 - c. Vulvar ulcerations (syphilis, herpes, chancroid, granuloma inguinale, lymphogranuloma venereum, amebiasis, Behcet’s syndrome, others)
 - d. Vulvitis (psoriasis, tinea, molluscum contagiosum, condyloma acuminata, scabies, pediculosis, furunculosis, pruritus vulvae, others)

Table 41

hygiene (as frequent baths) is important. Medication is avoided since it is not helpful and may lead to such complications as dermatitis medicamentosa.

BACTERIAL VAGINOSIS

General

In 1954, Gardner and Dukes described a gram-negative facultative anaerobe as an important cause of vaginitis. Previously, this microbe was called *Corynebacterium vaginale* or *Haemophilus vaginalis*, it is now called *Gardnerella vaginalis*. Current theory identifies a clinical syndrome called bacterial vaginosis in which the normal *Lactobacillus* species in the vagina are replaced with anaerobic bacteria, such as *G. vaginalis*, *Bacteroides* species, and *Mobiluncus* species. *Mycoplasma hominis* is also found. *G. vaginalis* is a common cause of vaginitis. Most experts now state that it is transmitted sexually and the male is frequently the asymptomatic carrier. The organism is a surface parasite which rarely causes gross vulvovaginal changes, but the female may develop a mild vaginitis. It is identified as the cause in 90% or more of the previously called “non-specific” vaginitis cases (termed bacterial vaginosis), and has recently been described in prepubertal individuals as well.

Symptoms and Signs

Gardnerella vaginalis causes a vaginitis in which there is a gray-white, nonpruritic, frothy, malodorous vaginal discharge. Overt cervical or bladder infection is not noted while the vaginal pH is usually 5.0 - 5.5. Transient *Gardnerella vaginalis* bacteremia has also been reported, usually associated with delivery or abortion.

Diagnostic Procedures

A saline preparation or gram stain of the leukorrhea identifies “clue cells” — epithelial cells covered (“studded”) with many gram-negative bacilli. A less-proven test is production of an amine-like odor when a small amount of this discharge is mixed with 10% potassium hydroxide (KOH) solution (whiff test). A gram stain may reveal diagnostic ratios of characteristic bacteria. Some laboratories have a specific fluorescent antibody test for

Gardnerella vaginalis and also culture media such as blood agar incubated in a CO₂ environment or thioglycolate broth. However, the presence of *G. vaginalis* is not diagnostic for bacterial vaginosis; as a result, a vaginal culture for *G. vaginalis* is not recommended as a diagnostic tool. The vaginal flora contains a predominance of *Gardnerella vaginalis*, *Mycoplasma hominis*, *Mobiluncus* and anaerobic bacteria (such as *Bacteroides* and *Peptococcus* species).

Treatment

Gardnerella vaginalis is now considered to be part of the normal vaginal flora, and treatment is not recommended unless overt, symptomatic vaginitis is present. Effective treatment for bacterial vaginosis should reduce the high level of anaerobic bacteria which are present. Metronidazole (500 mg, BID, orally, for seven days; or 2 grams, orally, in a single dose) is very effective. The single 2-gram dose of metronidazole results in a 75 - 85% cure rate versus 90 - 95% with the seven-day course.

Alternative treatments to metronidazole include clindamycin — 300 mg, orally, BID, for seven days; clindamycin cream (2%) — one full applicator (5 grams), intravaginally, before bedtime for seven days; or metronidazole gel (0.75%) — one full applicator (5 grams) intravaginally, 2 times a day, for five days. Application of various vaginal creams (AVC, triple sulfa, sulfisoxazole) are ineffective and not recommended. Metronidazole is contraindicated during the first trimester of pregnancy; clindamycin vaginal cream should be used instead. Whether or not the asymptomatic male sex partner should be treated remains controversial. Treatment of an HIV-infected youth with bacterial vaginosis is the same as outlined in this section.

Metronidazole has numerous side effects including monilial vaginitis, lethargy, minor gastrointestinal disturbances, headache, dizziness, transient neutropenia, bitter aftertaste, dermatitis, dry mucosal surfaces and possible depression. Nausea with emesis occurs when metronidazole is combined with alcohol due to a disulfiram effect. The single 2-gram dose may reduce many of the side effects for the disulfiram effect.

CANDIDA ALBICANS VAGINITIS

General

Candida albicans (Monilia albicans, Endomyces albicans, Oidium albicans) is a dimorphous fungus which can occur as a saprophyte or pathogen in humans. Cryptococcus and Saccharomyces are the other two fungi genera in the vagina, but they usually do not cause disease. Other *Candida* species as tropicalis, pseudotropicalis, guilliermondii, stellatoidea, parkrusei, and krusei are also not associated with symptoms. Infrequently, *Torulopsis glabrata* can produce a candida-like vaginitis. *Candida albicans* is ubiquitous, often noted on the foreskin, fingernails, or other skin parts. It can also be found in the vagina, rectum, mouth, semen, and prostatic secretions. Its incidence in the general adult population is 20% and in pregnant individuals is 50%. Some reports identify it in 50% of vaginitis, either alone or in combination.

Numerous factors, often with interrelated mechanisms, can precipitate monilial vaginitis. For example, there may be reduction of host defense mechanisms (as with severe iron deficiency anemia, steroids, chronic illness, aging); chronic *Candida* exposure (as with an intestinal reservoir, infected sex partner, contaminated soaps); removal of normal vaginal flora with *Candida* overgrowth due to broad-spectrum cells which lower pH (as with pregnancy, diabetes or oral contraceptives); an increase in heat or moisture due to obesity, tight nylon undergarments, and others.

Symptoms and Signs

Candida vaginitis frequently has pruritic vagino-vulvar erythema; a whitish, cheese-like leukorrhea; and a pH of 3.8 - 5.0. Less discharge and more pruritus with erythema is noted if antibiotics precipitate the infection. If pregnancy precipitates it, the leukorrhea may be more prominent. There may be improvement during menstruation with worsening before and after menstruation. Dysuria, urinary frequency, and dyspareunia are not uncommon. Chronic infection is suggested by the presence of labial or groin skin which is thickened, bronzed, or dull red. Secondary bacterial infection, fissuring, and lichenification may occur on legs, thighs, or perineal areas. The infection can also involve the endocervical glands and Skene glands. Dermatophytids (Monilids) can develop as very pruritic but sterile lesions at the sides of the fingers and hands.

Diagnostic Procedures

A drop of the leukorrhea is added to a drop of 10 - 20% potassium hydroxide solution. A microscopic evaluation notes that *Candida* is the only yeast present in the vagina in two forms: hyphae (also called filaments or pseudomycelia) and spores (also called yeast buds or conidia). In addition, numerous lactobacilli are seen in the potassium hydroxide preparation. A culture (using Sabouraud's or Nickerson's medium) can be obtained, and may prove useful in atypical cases.

Treatment

Numerous antifungal agents are effective. Currently recommended drugs include:

1. Miconazole nitrate (Monistat):
 - cream (2%), intravaginally, (5 grams/dose), once daily for 7 days
 - 200 mg vaginal suppository, one suppository for 3 days
 - 100 mg vaginal suppository, one suppository for 7 days
2. Clotrimazole (Gyne-Lotrimin, Mycelex-G):
 - cream (1%) intravaginally, (5 grams / dose), once daily for 7 - 14 days
 - 100 mg vaginal tablets (once daily for 7 days or BID for 3 days)
 - 500 mg vaginal tablet, one tablet, single application
3. 2% butaconazole nitrate (Femstat) cream — 6 cc given intravaginally for three days.
4. Others include terconazole and tioconazole as topical agents.

Severe, resistant (recurrent) vaginal candidiasis or disseminated *Candida* infection is treated with ketoconazole (Nizoral). Others include terconazole (Terazol) and tioconazole (Vegistat). The use of warm sitz baths with baking soda and hydrocortisone ointment is therapeutic for acute candidal vulvitis. Some creams and suppositories (as butaconazole, miconazole, ticonazole, orterconazole) are oil-based and can weaken latex condoms and diaphragms.

A young female with recurrent vaginal moniliasis needs a thorough evaluation for underlying precipitants including oral contraception, antibiotics, endocrinopathies (as diabetes), sexual activity with an infected partner, tight nylon undergarments and others. Sometimes treating for an entire month is helpful. Some clinicians have recommended white vinegar douches when pruritus occurs. If the sex partner is infected, use of a condom as well as treatment of the male genital area (including the foreskin in uncircumcised males) with antifungal ointment can be helpful. Some recommend oral Nystatin (500,000 units, BID to TID, for 10 days) for both partners to reduce the gastrointestinal reservoir.

TRICHOMONAS VAGINALIS VAGINITIS

General

Trichomonas vaginalis is a unicellular, flagellated protozoan first identified in 1836 by Donne. It is seen in 10% of private gynecologic patients, 30% of general clinic patients, 38% of sexually transmitted disease clinic individuals and 85% of women prisoners. Many of the estimated three million annual cases in the United States are in teenagers. It is often found with such disorders as gonorrhea and condyloma acuminata.

Three trichomonas species are described — *Trichomonas buccalis* in the mouth, *Trichomonas hominis* in the gastrointestinal tract, and *Trichomonas vaginalis* in the genital tract. *Trichomonas vaginalis* is spread sexually including through close genital contact. It has been noted to survive for a few hours in wet towels. The incubation period is 4 - 30 days, after which genital tract infection occurs involving the vagina, cervix, bladder, urethra, Skene's (periurethral) and Bartholin's glands.

Symptoms and Signs

Usually there are vaginitis and cervicitis present with secondary vulvitis. The vagina is erythematous and contains a profuse, greenish (or gray), frothy ("bubbly") or malodorous discharge. It is intensely pruritic with a pH of 5.0 - 5.5 or higher. A mucopurulent or turbid vaginal discharge may be noted but this can also be seen with herpes simplex infection, *Chlamydia* infection and gonorrhea. "Strawberry marks" (vaginocervical ecchymosis) and swollen vaginal papillae are classic for trichomoniasis.

There may be vaginal bleeding with genital trauma from coitus or even touching the genital area with a cotton swab. Dysuria is frequent and severe cases may present with low abdominal pain as well as excoriation of the vulva or inner thighs.

Adolescents may be more prone to severe symptomatology than adults. Postpartum trichomoniasis has been noted with fever, leukorrhea and endometritis. A prolonged carrier state is possible and may be associated with menses-induced, acute exacerbations, as well as chronic pelvic congestion, dysmenorrhea and menorrhagia.

Diagnostic Procedures

The saline drop, Papanicolaou smear and/or culture can aid with the diagnosis. The presence of the leukorrhea or cervical infection is not enough for diagnosis. For example, what appears as an "inflamed" cervix may be a benign cervical erosion in which the endocervical columnar epithelium spreads out of the cervical canal, forming a border around the external os.

A saline preparation reveals numerous pear-shaped motile microbes which are unicellular flagellated organisms twice the size of a white blood cell. These microbes may not be seen in chronic carriers if urine is the sample study or if the patient used a chemical douche prior to the exam. The lubricant used on the speculum can also hinder this test result.

These organisms can be noted in urine samples or on Papanicolaou smears. However, the Pap smear can result in a false-negative as well as false-positive result. Cultures are possible in some laboratories. These are helpful in suspicious cases with multiple negative saline preparations.

Treatment

Metronidazole is the current treatment of choice and can be given as a single 2-gram dose (8, 250 mg tablets) or as a 7-day course (500 mg, BID). It is not given during pregnancy (especially the first trimester) due to its feared teratogenic potential. Lactating women can be given the 2-gram dose if breast feeding is stopped for one to two days. Though a carcinogenic potential has been implied by some authors, recent studies do not confirm any association between metronidazole and cancer. Current recommendations are to use metronidazole for the treatment of trichomoniasis. If the patient is pregnant, clotrimazole

more per year): Acyclovir, 400 mg, orally, 2 times a day, or 3 - 5 times a day (*MMWR* 42:23-24, 1993). Prevention or treatment of secondary bacterial infection with broad-spectrum antibiotics may be helpful. If a female patient presents with active genital lesions prior to delivery, a Caesarian section is recommended to reduce the risk of infection for the fetus. Hospitalization may be necessary for patients with very painful lesions and/or acute urinary retention. Youth with a history of herpes genital infection should have an annual Pap smear. Sexual activity is not recommended during active lesions and condoms are useful when coitus occurs during asymptomatic periods.

CHLAMYDIA TRACHOMATIS CERVICITIS

General

Chlamydia trachomatis is an obligate intracellular parasitic microbe which requires tissue culture techniques (as with McCoy cells) for culture. Two species of *Chlamydia* are recognized: *Chlamydia psittaci* (causing psittacosis) and *Chlamydia trachomatis*. The latter consists of different subspecies which can cause cervicitis, urethritis, trachoma and/or lymphogranuloma venereum. *Chlamydia trachomatis* is now noted to be a major cause of sexually transmitted diseases. As many as 40 - 50% of women in STD clinics have a positive culture and as many as 60% of women with gonorrhea also have *Chlamydia trachomatis*.

It is identified in as many as 14.5% suburban teenage females and 35% urban teenage females (Cates, 1990). Sexually active adolescent males have a prevalence of asymptomatic chlamydial infection at a rate of 8 - 12%. The prevalence of chlamydial infection among asymptomatic, sexually active inner city adolescent females is 11 - 23%, and among college students is 5%. Recurrent infection is noted within 14 months in nearly 40% of previously infected adolescent females.

Risk factors include being under age 25, having sex with a new partner within the past two months, multiple sexual partners, pregnancy (20 - 30% prevalence), another STD (especially *N. gonorrhoeae* infections) and oral contraceptive agents (possibly mediated through extension of the columnar epithelium to the exocervix).

Symptoms and Signs

Chlamydia trachomatis cervicitis can present in various ways, but often there is vaginal mucosal erythema,

hypertrophic cervical erosion and purulent (or mucopurulent) cervical leukorrhea. Mixed infections (with other STDs) are common. Asymptomatic cases are also common, perhaps one-third in adolescent females for all STDs, and even higher for males. *Chlamydia trachomatis* can cause a wide variety of infections, as outlined in Table 42. Dysuria associated with pyuria can be due to *Chlamydia trachomatis* (urethral syndrome). The list of infections caused by this organism continues to expand. Pharyngitis is uncommon and usually due to *N. gonorrhoeae* or herpes simplex. Urethral syndrome, urethritis, cervicitis and epididymitis are common. Caucasian males with HLA-B27 who develop chlamydial urogenital infection may subsequently develop Reiter's syndrome.

Diagnosis

Chlamydia serology and culture are possible, but unfortunately, not available at all laboratories. As a result, clinical suspicion is necessary, and it must be considered as part of the differential diagnosis in the disorders listed in Table 42. It is especially considered in patients who have symptoms suggestive of gonorrhea, with or without negative-Gram stain and culture for gonorrhea.

Asymptomatic adolescent males can be screened for urine leukocyte esterase activity on unspun urine; sensitivity is 72 to 100% and specificity is 83 - 93%. It does not distinguish between *N. gonorrhoeae* and *C. trachomatis*. Cell culture is the only evidence allowed in forensic cases since specificity is considered to be 100%; culture sensitivity is 75 - 80%. Other diagnostic tests include enzyme-linked immunoassay (EIA, ELISA), direct fluorescent antibody (DFA), DNA probes, and polymerase chain reaction test.

Treatment

The recommended treatment schedule for chlamydial cervicitis is doxycycline (100 mg, twice a day, PO (orally), for 7 days) or azithromycin, 1 gram, PO, in a single dose (*MMWR* 42:1-39, 1993). The safety of azithromycin is not established for those under 15 years of age or during pregnancy. Alternatives include erythromycin base (500 mg, orally, four times a day for 7 days) and erythromycin ethylsuccinate (800 mg, PO, four times a day for 7 days). Another alternative for the nonpregnant patient is ofloxacin (300 mg, orally, twice a day for 7 days) and others.

Ofoxacin cannot be used during pregnancy or for those under 17 years of age. Pregnant females can be given erythromycin (not estolate) — 500 mg, four times a day, PO, for 7 days. Other alternatives for pregnant patients having difficulty tolerating the previous dose of erythromycin include erythromycin base, 250 mg, PO, four times a day for 14 days; erythromycin ethylsuccinate, 400 mg, PO, QID, for 14 days; or amoxicillin 500, mg, PO, TID for 7-10 days. Follow-up evaluation is necessary, as is treatment of sexual contacts. Urethritis due to *C. trachomatis* and *Ureaplasma urealyticum* have the same clinical appearance, but both usually respond to doxycycline or erythromycin. Lymphogranuloma venereum (LGV), which is uncommon in the United States, can be treated with doxycycline for 3 weeks.

**CHLAMYDIA TRACHOMATIS
INFECTIONS**

1. Cervicitis
2. Urethritis
3. Salpingitis
4. Peritonitis
5. Perihepatitis (Fitz-Hugh-Curtis syndrome)
6. Urethral syndrome (dysuria and apparently sterile pyuria)
7. Epididymitis
8. Conjunctivitis
9. Pharyngitis
10. Otitis media
11. Pneumonia
12. Endocarditis
13. Prostatitis
14. Proctitis (LGV stain)
15. ? Arthritis
16. ? Reiter's syndrome
17. Others

Table 42

CONDYLOMA ACUMINATA

General

These wart-like lesions are due to an infection with several types (6, 11, 16, 18, 31, 33, 35, 42) of the human papillomavirus (HPV) which has an incubation period of a few weeks to several months. It is sexually transmitted and is often associated with other STDs (as trichomonal vaginitis, monilial vaginitis, and gonococcal cervicitis). HPV is noted in 3 - 8% of unselected young female patients. Of patients seen in a sexually transmitted disease clinic, 25 - 50% were noted to have HPV using colposcopy (Becker, 1987). As many as 70% of these particular patients' sex partners displayed warts or had them before.

The potential of the condylomas for possible malignant changes (CIN – cervical intraepithelial neoplasia) are recently noted by many authors. HPV 6, 11 and 42 are linked to low-grade, squamous intraepithelial lesions (SIL) of the cervix; types 16, 18, 31, 33 and 35 are linked to high-grade SIL lesions of the cervix and to anogenital tract cancers. A causal relationship between HPV and cervical cancer is identified, but not yet absolutely proven (Roye, 1992). HPV infection is a possible indicator of child sexual abuse. (HPV, type 2, causes the common hand wart while types 1 and 4 cause the plantar wart.)

Symptoms and Signs

Condyloma acuminata may involve any part of the genitals (including the vagina, urethra, bladder, or anal canal) and the infection can be very extensive. They seem to worsen in individuals with vaginal discharge, poor hygiene, heavy perspiration, and pregnancy. Lesions resistant to treatment are reported in some individuals with insulin-dependent diabetes mellitus and with immunosuppressive disorders. The differential diagnosis includes molluscum contagiosum, condyloma lata, and pearly penile papules (Biro and Hillard, 1990).

Diagnostic Procedures

The presence of squamous papillomas in moist mucocutaneous areas of the external genitalia and perianal regions is usually sufficient for its diagnosis. Biopsy is confirmatory and mandatory if lesions are resistant to podophyllin therapy. Voiding cystourethrography will demonstrate if intraurethral spread has occurred. Colposcopy is used by some clinicians but there are problems with access and cost. Cytology (Pap smear) is the

most practical diagnostic tool but has low sensitivity and specificity. Molecular diagnostic modalities include *in situ* hybridization, dot-blot (commercially available ViraPap/Vira Type), Southern blot, and polymerase chain reaction (PCR). The last two are currently used only as research tools. The PCR is the most sensitive test for HPV.

Treatment

Therapy of concomitant venereal disease and use of 10 - 25% tincture of podophyllin (podophyllum resin in tincture of benzoin) on the lesions may be helpful, especially if the areas are less than 2 cm in diameter. White petrolatum jelly is then added and this mixture of podophyllin and white petrolatum jelly is thoroughly washed off in 2 - 4 hours. There are other techniques for using podophyllin but they all stress that normal tissue must be protected from the caustic podophyllin. Weekly applications may be necessary and seems to be most effective with moist, fleshy, sessile genital warts. The role of more frequent application is under study. Podophyllin is not used for cervical warts or for pregnant patients.

If there is not regression after four weekly trials, other methods are used. Unfortunately, there is no treatment proven to eradicate this virus and no specific regimen which will remove the warts and prevent recurrences. The use of topical chemotherapeutic agents (as 80 - 90% trichloroacetic acid or 5-fluorouracil) has been used as a supplement to topical podophyllin treatment. Podofilox (0.5%) is available for home use.

Methods which have been recommended as alternatives to podophyllin therapy include curettage, electrocauterization, loop electrosurgical excision procedure (LEEP), alfa interferon, surgical excision, and cryotherapy (with liquid nitrogen or solid carbon dioxide). Immunotherapy with an autogenous vaccine (prepared from excised warts) has been attempted but is without proven success (Gutman, 1995). Laser treatment has also been used with success. Careful follow-up of these patients is important, due to the link of this virus to genital cancer.

PELVIC INFLAMMATORY DISEASE

Introduction

Pelvic inflammatory disease (PID) defines an infection of the uterus and fallopian tubes in menstruating females. It can be associated with various factors, such as

instrumentation, surgery, malignancy, pregnancy, and sexually transmitted diseases (STD). This section concentrates on PID as an STD. There are over one million estimated PID cases, with 25 - 50% requiring hospitalization. Many of these episodes occur in young women. The incidence of PID has been estimated at 10 - 13 per 1,000 women aged 15 - 19, and 20 per 1,000 for women aged 20 - 24. Current studies note that 10 - 15% of reproductive-age females have one or more PID episodes. Most PID patients are nulliparous and are under age 25; one-third are under age 19. Risk factors for PID development include multiple sex partners, history of previous PID, presence of an intrauterine device, and/or young age. The infection is less common in pregnant women and in some women who take birth control pills.

There are many microbial causes (see Table 43). Primary causes of PID seem to be *Neisseria gonorrhoeae*, *Chlamydia trachomatis* and *Mycoplasma hominis*. Continued infection, often with fallopian tube injury, leads to infection with multiple bacteria, including gram-negative and anaerobic microbes. It is this **polymicrobial infection** which causes some major PID complications. Gonorrhea often starts the infection and is cultured in 30 - 80% of PID case studies. Classic studies note that 10 - 17% of untreated cervical gonorrhea eventually develop into PID, and approximately two-thirds of gonococcal PID occur within seven days of the menstrual period. *Chlamydia* is the other major precipitant to PID.

BACTERIAL AGENTS OF PELVIC INFLAMMATORY DISEASE

- Chlamydia trachomatis*
- Neisseria gonorrhoeae*
- Mycoplasma hominis*
- Beta-hemolytic Streptococcus
- Neisseria meningitidis*
- Coliform bacteria: Enterobacteriaceae
- Bacteroides fragilis*
- Streptococcus faecalis*
- Other anaerobic microbes
- Other aerobic microbes

Table 43

Clinical Aspects

PID should be considered in the sexually active female who has low abdominal (“pelvic”) pain. Most will have cervico-adnexal tenderness but only one-half present with obvious leukorrhea. There is variable symptomatology, depending on which organism(s) is involved and how long the infection has lasted. “Classic” aspects of gonococcal induced PID include vaginal discharge, adnexal tenderness, fever, elevated white blood count, and elevated erythrocyte sedimentation rate; however, this combination will be seen in only one in five of gonococcal-induced PID cases. Overt adnexal swelling is found in only 25% of cases and a tubo-ovarian abscess is seen in 10% of cases. PID caused by *Chlamydia trachomatis* will have fewer classic features and may even display none.

Diagnosis

Most clinicians observe that low abdominal pain (particularly with adnexal tenderness) strongly indicates PID in a sexually active female patient. The differential diagnosis of PID is listed in Table 44. This diagnosis can be difficult, even for the most experienced clinician. A misdiagnosis is not unusual if the diagnosis is made solely on the basis of history, abdominal examination and pelvic evaluation. This should always be remembered when evaluating a patient suspected of having PID.

There are many procedures which can be used for diagnosis. Leukocytosis is variable, while a high erythrocyte sedimentation rate frequently is noted. Specific culture results depend on the site which is used (as rectum, fallopian tubes, cervix or peritoneum) and the symptom duration. Even though *Neisseria gonorrhoeae* may not be cultured from the cervix if several days have passed since the symptoms developed, toxin-induced fallopian tube injury may have occurred already, resulting in polymicrobial infection. Culdocentesis and ultrasound may be needed in some PID cases. A negative serum pregnancy test essentially eliminates the possibility of an ectopic pregnancy. Most clinicians now note that laparoscopy is an excellent procedure, particularly if it is an atypical or silent PID case.

Early diagnosis and therapy is important to lessen the many complications of PID. Many teenagers develop tubal occlusion because of PID, with resultant infertility. Classic papers describe a 13% infertility rate after one severe episode of gonococcal-induced-PID; this becomes 35%

DIFFERENTIAL DIAGNOSIS OF PELVIC INFLAMMATORY DISEASE

- Appendicitis**
- Endometriosis**
- Ectopic pregnancy**
- Ovarian cyst (with or without torsion or rupture)**
- Pyelonephritis**
- Mesenteric lymphadenitis**
- Inflammatory bowel disease**
- Henoch-Schonlein syndrome**
- Hemolytic-uremic syndrome**
- Gastroenteritis (as due to *Yersinia enterocolitica* or *Campylobacter fetus*)**
- Acute intermittent porphyria**
- Other**

Table 44

with a second infection; the rate is over 70% with three or more episodes. An estimated 20% develop recurrent PID, and unfortunately, a large number of teenagers are sterilized each year because of this major STD. The recently observed tripling of ectopic pregnancy is mostly due to PID. Other sequelae of PID include dysmenorrhea, dysfunctional uterine bleeding, chronic abdominal pain, Fitz-Hugh-Curtis syndrome, and others.

Treatment

Numerous therapy plans have been offered for the treatment of PID. Because the exact PID microbiologic etiology is often unclear, the decision of a therapy plan is complicated. Also complicating the problem is the possibility that PID may be, in part, an autoimmune phenomenon. However, authorities agree that early diagnosis and treatment is vital to lower PID-associated morbidity.

Outpatient plans can be used for mild cases and are designed for treatment of gonorrhea and/or *Chlamydia* infections: Cefoxitin (2 grams, IM, once) plus probenecid (1 gram, orally, once) or ceftriaxone (250 mg, IM, once); the cefoxitin or ceftriaxone plans are each followed by

doxycycline (100 mg, orally, BID, for 14 days). An alternative treatment plan is ofloxacin (400 mg, BID, PO, for 14 days) plus either clindamycin (450 mg, PO, QID) or metronidazole (500 mg, PO, QID) for 14 days. Failure to improve with these oral medications and suspicion of severe PID are good reasons to hospitalize young females with this disorder. Other reasons for hospitalization include patients who have an adnexal mass, pregnancy, peritoneal signs, inability to take pills, and those with an uncertain diagnosis.

Hospitalized teenagers can be offered one of these plans (*MMWR* 42:75-81, 1993):

1. Cefoxitin (2 grams, IV, q 6 hours), with IV doxycycline (100 mg q 12 hours) until improvement; then doxycycline (100 mg, orally, BID) to complete 14 days.
2. Cefotetan (2 grams, IV, q 12 hours), with IV doxycycline (100 mg, IV, q 12 hours) until improvement; then doxycycline (100 mg, orally, BID) to complete 14 days.
3. Clindamycin (900 mg, IV, q 8 hours), plus gentamicin (2 mg/kg, IV, once, followed by 1.5 mg/kg, IV, q 8 hours) until improvement; then doxycycline 100 mg, orally, BID to complete 14 days.

Acquired Immunodeficiency Syndrome (AIDS)

Acquired Immunodeficiency Syndrome was first reported in 1981 and has emerged as the most important sexually transmitted disease of the twentieth century. It is caused by a retrovirus (an RNA virus which contains a special enzyme called reverse transcriptase). This particular virus is an RNA cytopathic human retrovirus and is identified as the human immunodeficiency virus 1 (HIV-1). It is spread through sexual contact, accidental blood contact during sharing of drug injection equipment, and through perinatal transmission from an infected woman during delivery as well as through breast feeding. HIV binds to CD4 receptors of lymphocytes and other cells. RNA then enters the cell and is transcribed to a linear, double-stranded DNA which is integrated into the host DNA. The result is an illness characterized by progressive malfunction of the cellular immune system with depletion of CD4 receptor-

specific lymphocytes. HIV is associated with multiple opportunistic and other infections.

The majority of victims are men who have had anal intercourse with other men. Another major group is drug users sharing infected needles. A former major third group involved hemophiliacs who were given contaminated blood products, particularly concentrate factor VIII infusions. Another high-risk group is individuals who received a blood transfusion prior to 1985 and/or factor-component therapy. Currently, transfusion of blood, blood components, or clotting factor concentrates is a rare cause of HIV infection. The risk to health care professionals who contact infected blood is very low if universal precautions are followed. The virus can be spread heterosexually by infected individuals, a method of transmission increasingly reported as the 1990s have progressed.

Current observation concludes that ALL elements of the population are susceptible, including children and adolescents. The transmission from male to female is more efficient in the spread of HIV infection than female to male. Rates of HIV infection in adolescents in urban areas range from 0.5% to 3%, and even higher in certain high-risk groups. HIV infection in children and adolescents represents 2% of all reported HIV infections. Regular or casual (non-sexual) contact with an infected individual does not lead to HIV infection, and infected children do not spread HIV infection to school mates by normal contact. However, HIV-infected children should not bite or allow their blood to contact others. The Centers for Disease Control and Prevention has published guidelines for these situations.

The incubation period for AIDS from HIV infection to clinically apparent illness is estimated at a median range of 8 - 12 years. It is unclear what the time length is regarding introduction of the virus and positive laboratory tests, but estimates suggest two to six months. However, certain clinical findings suggest a more rapid than usual progression to clinical infection or AIDS: severe vaginal candidiasis, hairy leukoplakia, disseminated herpes simplex and herpes zoster infection. Those with antibodies to HIV are considered infectious and capable of giving HIV to others. Recent studies suggest that during the several years of infection before symptoms develop, there is an intense struggle by the immune system to remove the virus. Eventually, the immune system becomes exhausted and overt symptoms develop.

Between January 1, 1993, and December 31, 1993, the number of HIV cases reported to the Centers for Disease Control and Prevention (CDC) increased 127% from the number reported in 1992. This increase in the number of cases was largely due to changes in the 1993 AIDS surveillance case definition. As of January 1, 1993, HIV-infected persons with additional clinical conditions, as well as those with markers of severe immunosuppression, were defined as having AIDS (*MMWR* Vol. 42, No. 53, 1993). As of November 1995, there were 9,117 cumulative AIDS cases in individuals under age 20. This represented 1.9% of the 501,310 total reported AIDS cases in the United States. Among all reported AIDS cases, 0.3% were American Indian, 0.7% were Asian or Pacific Islander, 17.4% were Hispanic, 34.0% were Black, and 47.5% were white.

Symptomatology

HIV infection results in a wide spectrum of illnesses, ranging from no overt symptoms at first to full-blown AIDS. Clinical illnesses include fever, rash, lymphadenopathy, leukopenia, and a variety of infections. The actual illness is linked to the presence of various "markers" including low counts of CD₄ lymphocyte, beta-2 microglobulin, p24 antigen, and neopterin. There is also an increased CD₈ lymphocyte count. The normal CD₄ lymphocyte count in adolescents is 1,200 - 1,500 cells/cubic mm; a lower count correlates roughly with a greater risk of opportunistic infections. Diagnostic criteria for AIDS include a CD₄ count under 200 cells/cubic mm or a CD₄ percentage (CD₄ to CD₈ cell ratio) of under 14, with laboratory evidence for HIV infection (Pizzo and Wilfert, 1994; Chaisson and Volberding, 1995). Several diagnostic tests are available to detect antibody to HIV (Mandell, Bennett and Dolin, 1995). Enzyme immunoassays (EIAs) are often used to screen for HIV antibody, while Western blot or immunofluorescent antibody tests are used to confirm HIV infection.

Some patients develop a variety of symptoms including fever, night sweats, diarrhea, fatigue, weight loss, persistent generalized lymphadenopathy, oral candidiasis and many others (Chaisson and Volberding, 1995). The fatal acquired immune deficiency syndrome involves a number of serious conditions: cancers, pulmonary infections, enteric infections, neurologic disorders, ocular disorders, and others. In AIDS, there is a major deterioration of the immune system (especially involving T-lymphocytes) which leads to a fatal condition characterized

by malignancy and severe, opportunistic illnesses. Table 45 lists some of these conditions (Pizzo and Wilfert, 1994; Chaisson and Volberding, 1995).

The most common AIDS-related malignancies in adults are Kaposi's sarcoma and lymphomas, while the most common pulmonary infection is *Pneumocystis carinii* pneumonia. In order to meet the criteria for AIDS, there should be no other known cause of immunosuppression, such as primary neoplastic disease, renal failure, or corticosteroid therapy. Candidiasis may involve the esophagus, trachea, bronchi and lungs, while *Herpes simplex* infection of the esophagus, bronchi and lungs is also characteristic. Other diagnostic criteria include recurrent *Salmonella* septicemia and cytomegalovirus infection of organs with or without involvement of the liver, spleen and lymph nodes. A number of laboratory test abnormalities can occur, depending on the disorders which have developed. A large number of hematologic and immunologic abnormalities have been seen.

Testing for HIV can be offered to those at high risk for the infection (see Table 46). Such testing should not be mandatory, but rather anonymous or confidential (Task Force on Pediatric AIDS, *Pediatrics*, 1993). Confidential testing links the adolescent to medical care while anonymous testing is more likely to protect the adolescent's rights and confidentiality. Pre-test and post-test counseling should be offered (D'Angelo, Brown, English, et al., 1994). In the pre-test counseling, the youth's motivation for testing can be evaluated while explaining the "benefits" and "risks" of testing. Young people can be carefully educated about HIV infection and about limitations of the testing. Some clinicians consider NOT testing a youth who is without support. In this situation, the youth should be helped to define or recognize potential, existing support in his/her life. In the pre-test counseling, WRITTEN consent should be obtained. Ideally, the same clinician who provides the pre-test counseling should provide the post-test counseling.

The results of HIV testing should be simply and factually related to the young person. Pregnant adolescent females should be tested for HIV infection in early pregnancy. If the adolescent is HIV positive, she may be able to prevent HIV transmission to her baby by being treated early with the drug Zidovudine. The baby will also need to be treated after birth. Following this recommendation can reduce the child's chances of becoming HIV positive by as much as two-thirds.

Education about HIV and other STD risk reduction should occur. The youth should be assisted in planning who to inform (partners, family, others) if the test is positive for HIV (D'Angelo in Pizzo and Wilfert, 1994).

If a teenager has been identified as having the HIV virus, various protocols have been established (Hein, 1991; Pizzo and Wilfert, 1994; Corey, 1995). Comprehensive psychosocial supports are critical to the effective management of this severe infection. Basic medical tests include a complete blood count (with platelet count), chemistry profile (evaluating liver and kidney function among others), and general STD test for *Chlamydia trachomatis* and *Neisseria gonorrhoeae*, wet prep, syphilis serology, Hepatitis B serology, cervical cytology, and others (Kipke, 1990; Kunins, et al., 1993). The assessment for tuberculosis must include using a PPD with an anergy panel.

Clinicians should measure the T-cell level, especially the CD₄ (T-helper cell), and the helper/suppressor (T4/T8) ratio. One should measure the CD₄ count as a baseline. If there are under 500 CD₄ cells/microliter, this indicates an abnormal immune system. Antiretroviral treatment is suggested. Prophylactic treatment is started against *Pneumocystis carinii* pneumonia with CD₄ counts under 200. The clinician should also measure the small p24 antigen, the beta-2 microglobulin, neopterin, gammaglobulin levels and antibodies to p24 antigen. If the patient is asymptomatic and has a CD₄ count over 500, then the young person should be seen every three months with certain blood studies repeated, such as a complete blood count and a general chemistry profile. Every four to six months, there should be a CD₄ cell count, a beta-microglobulin level taken, and a p24 antigen level determined. A Pap smear should be done every six to twelve months for sexually active females, and a yearly syphilis serology screening should be done (Pizzo and Wilfert, 1994).

Unfortunately, there is no definitive (curative) treatment for AIDS. However, several drugs known as nucleoside analogs are available for treatment including Zidovudine (ZDV, Retrovir), previously called azidothymidine, which can reduce the number of opportunistic infections and prolong survival. Other available drugs include ddI (dideoxyinosine, didanosine, Videx); ddc (dideoxycytidine zalcitabine, HIVID); d4T (stavudine, Zerit); 3TC (lamivudine, Epivir); and saquinavir (Invirase). Most recent developments recommend use of

DISORDERS OF AIDS

1. Cancer
 - a. Kaposi's sarcoma
 - b. Brain lymphoma
 - c. Non-Hodgkin's lymphoma (immunoblastic lymphoma)
 - d. Invasive carcinoma of the cervix
 - e. Others
2. Meningitis, encephalitis, and/or pneumonitis due to
 - a. *Pneumocystis carinii*
 - b. *Toxoplasma gondii*
 - c. Cytomegalovirus
 - d. Cryptococcus
 - e. Aspergillus
 - f. Nocardia
 - g. *Candida*
 - h. Strongyloides
 - i. *Mycobacterium tuberculosis*
 - j. Others
3. Enteric infections
 - a. Esophagitis
 1. Herpes simplex
 2. Cytomegalovirus
 3. *Candida*
 - b. Severe diarrhea due to *Cryptosporidium* enteritis, *Isospora belli*, amebiasis, giardiasis, salmonellosis, shigellosis, and others.
4. Ocular disorders
 - a. Keratoconjunctivitis
 - b. Choroidal granuloma
 - c. Retinal hemorrhage
 - d. Conjunctival Kaposi's sarcoma
 - e. Cytomegalovirus retinitis
5. Others
 - a. Progressive multifocal leukoencephalopathy
 - b. Peripheral neuropathy
 - c. Myelopathy
 - d. Disseminated fungal infections (cryptococcosis, coccidioidomycosis, histoplasmosis, candidiasis, and others)
 - e. Wasting syndrome
 - f. Disseminated *Mycobacterium avium* complex or *Mycobacterium kansaii*
 - g. Recurrent bacterial pneumonias
 - h. Many others

Source: Centers for Disease Control and Prevention. "1993 revised classification system for HIV infection and expanded surveillance case definition for AIDS among adolescents and adults." *MMWR* 41(RR-17): 1-19, 1992.

Table 45

combination drugs such as ZDV with 3TC or saquinavir with any of the nucleoside analogs. Saquinavir is a protease inhibitor that interferes with the reproduction of the virus (Centers for Disease Control and Prevention).

Careful attention to concomitant diseases which are altered by HIV infection (as syphilis, tuberculosis, others) is important (D'Angelo, Brown, English, et al., 1994). Management should be directed by a clinician who is well trained to evaluate and treat HIV/AIDS.

A number of antibiotic agents are used for the various infections which can occur with HIV; however, success is limited due to the eventual breakdown of the individual's immune system. Treatment of *P. carinii* infection is with trimethoprim - sulfamethoxazole DS (Bactrim, Septra, others), Dapsone, aerosolized pentamidine, and other agents (Masur, 1995). Treatment for disseminated *Mycobacterium avium* complex disease is with rifabutin (Mycobutin). Clarithromycin (Biaxin) may also be useful in atypical *Mycobacterium* infection. Treatment for disseminated

candidiasis is with fluconazole (Diflucan). *Toxoplasma gondii* infections are often treated with pyrimethamine and sulfonamides, pyrimethamine and clindamycin, or other regimens. Masur (1995) provides a review of these and many other HIV-associated opportunistic infections, including current treatment options.

Immunization status should be thoroughly evaluated, making sure that measles vaccine (using MMR) and Td vaccinations are updated. Inactivated polio virus vaccine versus the live-virus vaccine should be used. Pneumococcal vaccine, annual influenza vaccine and Hepatitis B vaccine (where appropriate) should be given (1994 *Red Book*, pages 263-265). A vaccine to prevent AIDS appears to be many years away and new variations of the AIDS virus (such as HIV-2) may compromise this approach. The use of a condom during coitus is recommended to reduce the risk of AIDS transmission. The total medical, social, and psychological consequences of this devastating, sexually transmitted disease are only now becoming apparent.

THOSE AT HIGH RISK FOR HIV INFECTION

1. Males or females who have sex with HIV-infected men
2. Prostitutes
3. Injecting drug users
4. Adolescents with different sex partners (especially those with four or more)
5. Persons who received blood transfusions prior to 1986
6. Persons who received factor component therapy prior to 1988
7. Individuals having syphilis
8. Young people with a history of multiple episodes of STDs
9. Pregnant females
10. Homeless or runaway youth
11. Sex "exchangers": for money, shelter, drugs, food, favors, etc.
12. Individuals with suggestive clinical findings

Table 46

ADOLESCENT SUBSTANCE ABUSE DISORDERS

Introduction

The sociomedical phenomenon of drug use/abuse among adolescents is among the most critical issues facing society today. The environment is permeated with drugs of all kinds. Currently, the question is not **if** most teenagers will use drugs, but which ones they will try. Another question to be answered is "How many will become drug abusers?"

In 1971, a Gallup Poll revealed that most Americans thought that drug use was one of the most serious health problems facing the United States. Unfortunately, in the 1990s, it remains a very serious problem. Recent epidemiologic surveys confirm that most young people experiment with drugs such as alcohol and/or marijuana while many others try such drugs as tobacco, amphetamines, hallucinogens, barbiturates, and narcotics (O'Malley, 1993; Kaminer, 1994). The distinction between drug use and abuse is not always clear, and controversy does exist when seeking to label young people as dependent or not drug dependent. Some individuals accept limited experimentation as normal while others equate any use as abnormal. This manual suggests that abnormalities exist when the drug use begins to interfere with childhood and

adolescent development, subsequently threatening adulthood. The medical and psychological effects of drug use/abuse are many and vary with the individual, the extent of the drug use, and which drugs are involved.

A major difficulty in dealing with this issue is society's pervasive acceptance of drugs. Chemicals are frequently prescribed to improve various medical conditions, to reduce pain, to improve sleep disorders, to improve scholastic or sports performance, to improve appearance, to treat behavioral disorders (psychological or psychiatric), and that allow individuals to feel better. An effective solution to the drug abuse problem must start with making the automatic use of drugs less acceptable to society than is now the case. This section of the manual will review certain aspects of the substance phenomenon: epidemiology, etiology, symptomatology (including stages of drug use/abuse), types, and general treatment issues.

EPIDEMIOLOGY OF DRUG ABUSE

Introduction

America has had a long, historical struggle with drugs. Narcotic addiction was rampant in the last one-third of the nineteenth century. Marijuana was not used much before 1930. Prior to 1960, drug use was mainly a problem of adults, not children or teenagers. Unfortunately, a considerable increase in drug use by youth occurred between 1960 and 1980. In the late 1960s, there was widespread use of hallucinogens, opiates, amphetamines, barbiturates, and inhalants. Marijuana and alcohol use increased dramatically in the 1970s, and cocaine abuse became a serious additional problem in the 1980s. The sharpest increase in drug use among junior high and senior high students occurred between 1975 and 1978.

Though some decrease has occurred since then, the problem remains severe. Many studies demonstrate this trend. A few are cited here. The University of Michigan Annual Drug Survey surveyed 16,000 high school students in 1984 and noted that 30% admitted some type of drug use over the previous 30 days (Johnson, 1984). Currently, the University of Michigan's Monitoring the Future Study surveyed approximately 50,000 students (grades 8, 10, 12) in more than 400 schools. According to this study, there have been declines in recent years in use of cocaine and heroin by high school seniors; but in 1993 there was an

increased use of stimulants, sedatives, hallucinogens, marijuana and inhalants. Along with an increase in the use of illicit drugs, there has been a decline in the perceived dangers of these drugs. Not only seniors but also 8th and 10th graders increased their use of marijuana, stimulants, LSD and inhalants in the middle of the 1990s. These increases in drug use/abuse occur across most sectors of our society and are not concentrated just in large cities or regions of the country.

Complicating the drug phenomenon in the 1990s is the growing problem of "designer drugs" —synthetic chemical versions of amphetamines, opiates and others (Brown and Coupey, 1993). These drugs are made in illegal laboratories and released for "recreational" use. They are not officially on the Drug Enforcement Agency (DEA) list of controlled substances and it is more difficult to prosecute the designer drug manufacturer. These drugs may be made more potent and less expensive than the original drug. The negative impact of designer drugs on our society is considerable (Jerrard, 1990; Rutenber, 1991).

Recent studies regarding four commonly abused drugs will be reviewed: alcohol, tobacco, marijuana, and cocaine. Early use of alcohol, cigarettes, and marijuana is important as these substances are called "gateway drugs" — often leading to polydrug abuse in later adolescence and early adulthood.

Alcohol

Johnston's, et al., 1982 review of 17,000 high school seniors noted that 75% had experimented with alcohol and 5% used it daily. Another study under the guidance of the National Institute of Drug Abuse (NIDA) suggested that 93% of young people surveyed had tried alcohol: 87% during the preceding year, 70% over the previous month, and 5% reported daily use (Johnson, 1984; Clayton, 1985). A study published in 1983 revealed that by age 13, 30% of males and 20% of females were experimenting with alcohol; this climbed to 93% of the males and 73% of females at age 18 (Clayton and Ritter, 1983). Forster (1984) studied upper-middle-class adolescents and reported that 73% of fifth-to-sixth-graders had tried wine and 23% had tried other types of alcohol. Data from 1988 that studied rural high school seniors noted that 91.3% had tried alcohol at some point, that there was a past year use of 83.9%, a past 30-day use of 63.8% and a daily use of 4.5% (Johnston, 1989). Data from 1993 noted that 51% of high school

seniors used alcohol at some time over the 30 days prior to the survey — the same as in 1992 versus 60% use in 1989. Data from 1993 also reported that 90% of seniors had consumed alcohol at some point, with nearly one-third participating in binge drinking (five or more drinks in a row in the prior two weeks (O'Malley, 1993).

Current estimates indicate that 15% of high school seniors drive while intoxicated. There are 18,000 alcohol-related fatalities noted in youth under age 18, and there are an additional 18,000 fatalities in those 18 to 25 years of age. The National Council on Alcoholism (NIDA) estimates that there are over three million teenage problem drinkers in this country. Many more will become problem drinkers as adults. The NIDA estimates 15 million children (one of every five in the physician's office) live with an alcoholic parent. Recent literature (Cuda, 1993) details the extensive psychological damage occurring to the child of an alcoholic (COA).

Tobacco

Although not fully appreciated by most health care professionals, the use of tobacco by adolescents remains a major health problem which serves as a time bomb for these individuals. Forster's study revealed that 27% of fifth and sixth graders had tried cigarettes; this figure rose to 55% for seventh and eighth graders. An NIDA study of high school seniors revealed that 70% had tried cigarettes (30% during the previous month), and 21% used cigarettes on a daily basis in 1982. Johnson's, et al., 1982 study noted that 12% of American high school seniors used tobacco on a daily basis. In 1982, Holleb summarized the literature by noting that 11% of boys and 13% of girls 12 to 18 years of age smoked 10 or more cigarettes per day.

The rate of cigarette use by adolescents in 1988 was 66.4%, with daily use of 18.1% by high school seniors (including 10.1% reporting a daily use of over half a pack). Rates for tobacco use by young people continue to rise; with one-third having smoked in the previous 30 days; and a daily rate of smoking by seniors which rose from 17 to 19% in 1993. Research notes that 85% of young people who completely smoked two cigarettes became regular cigarette smokers (Silvis, 1987). The consequences of such action are enormous. There also has been an increase in the use of chewing tobacco which leads to such adulthood difficulties as cancer of the salivary gland, cancer of the gum, and leukoplakia, as well as cigarette addiction. Cigarettes

remain one of the few drugs abused by adolescent females more than adolescent males — possibly due to the anorexic effect of tobacco (Slade, 1993). Unfortunately, with 55 million cigarette smokers in the United States, the problem of tobacco is enormous.

Marijuana

As previously noted, use of marijuana was unusual in adolescent populations before 1960. Prior to 1962, 1% of 12-to-17-year-olds experimented with marijuana versus 4% of 18-to-25-year-olds (DuPont, 1985). In 1979, 31% of 12-to-17-year-olds tried marijuana versus 68% of 18-to-25-year-olds. In 1978, 60% of American high school seniors tried marijuana and 5% claimed daily use. Since marijuana is considered a "gateway" drug, its use in early- to mid-adolescence is suggestive of future polydrug use/abuse. Forster noted that 4% of fifth-to-sixth graders tried marijuana versus 19% of seventh-to-eighth graders and 58% of high school seniors. Schwartz observed that 4% of 1,300 eighth graders in Maryland used marijuana on a daily basis. In 1982, NIDA reported that 6.3% of high school seniors used marijuana on a daily basis versus 59% of seniors who had ever tried it.

Overall, drug use among eighth graders rose from 8% in 1971 to 20% in 1978. Use of marijuana is still unusual in children under age 10, but its use increases significantly in adolescence and adulthood. Marijuana acceptance by much of current society constitutes a major problem in reducing current marijuana abuse. In 1982, it was estimated that 64 million Americans had tried marijuana while 20% were active users (at least once in the 30 days prior to the survey). A 1988 survey of rural high school seniors noted that 41.9% had smoked marijuana at some time in the past; 29.0% had smoked marijuana in the past year; 14.3% had tried it within the previous 30 days; and 1.4% had used it daily (Johnston, 1989). The 1993 survey noted that 15% of seniors had used this drug during the past 30 days versus 12% in 1992.

As noted above, the gateway significance of marijuana is very serious. Marijuana use itself can easily become a chronic pattern. A study of high school seniors who used marijuana daily noted that 50% were still daily users five years later (Johnson, et al., 1982). Kandel studied 1,325 young adults aged 24 to 25. Fifteen percent used marijuana four or more times per week, and 23% used it once or more per month. Such individuals revealed greater psychiatric dysfunction than non-marijuana user controls. If use of

TYPES OF DRUGS

Alcohol

There are many drugs which are frequently abused and are available to young people (see Table 52). Alcohol is one of the most used and abused drugs in society (Rogers and Adger, 1993). It is classified as a central nervous system depressant which causes a euphoric feeling that most find very pleasant. Tolerance and psychological dependence develop in many individuals while physiologic dependence is well recognized in alcoholics. The actual reaction to alcohol depends on the type and amount consumed.

Alcohol content varies widely — in beer (3 to 6% alcohol), wine (12%) and various liquors (50%). Mild intoxication is sometimes defined by 0.05 mg/dl or greater. Judgment can be impaired at a blood level of 0.10 mg/dl or lower. Legal intoxication in most states is 0.10. An increasing amount of alcohol leads to respiratory depression, coma, and even death. The mixture of drinking and driving has proven to be a dangerous one for both drinkers and numerous innocent victims. Young people at parties should be urged not to drink or at least to have a non-drinking peer or other sober individual (as a parent) drive them home.

Alcoholism is a major disease in adults and adolescents. Many young people are unable to stop at the social drinking or experimentation stage. Rapid progression through the MacDonald stages can then ensue. Problem teenage drinkers tend to come from homes where parents are excessive drinkers or where no alcohol is consumed. Current research is focusing on genetic factors in the development of alcoholism.

Medical complications from excessive alcohol consumption are well known including overt intoxication, gastritis, pancreatitis, toxic psychosis, worsening of diabetes and epilepsy, as well as other medical conditions. Teenage problem drinkers may develop elevation in serum gamma glutamyl transpeptidase, glutamic-oxaloacetic or pyruvic transaminases, alkaline phosphatase, bilirubin and uric acid. Alcohol withdrawal syndrome is characterized by tremors, hallucinations, seizures, and overt delirium tremens. Fetal alcohol syndrome is a well-recognized consequence of alcohol consumption during pregnancy.

Marijuana

Marijuana can be categorized as a hallucinogenic drug and is a popular illicit drug for millions of individuals (Brown and Coupey, 1993). It comes from the *Cannabis sativa* plant and its active ingredient is delta-9-tetrahydrocannabinol (THC). Street marijuana can vary widely in its THC content from one percent to over four percent. The plant also contains over 400 other chemicals including benzopyrene, a recognized carcinogen also seen in tobacco. Though usually smoked, it can also be taken orally. It produces an intense feeling of relaxation within minutes of initial use and this euphoria can last several hours. Classic physical addiction is not proven, but tolerance and psychological dependency are well accepted consequences of heavy marijuana use. Frequent marijuana use by youth may lead to confused thinking, shortened memory span, and dulled reflexes which can be very detrimental to their ability to successfully carry out daily tasks in school, at home, and in other environments.

Marijuana is a dangerous drug for young people (“Marijuana,” *Pediatrics*, 1991). Chronic use is a part of and may be a cause of “amotivational syndrome” with extreme lethargy, lack of interest in work or school and various social difficulties. Psychological reactions are well-described in some marijuana users and include depression, anxiety, fear, violent behavior, delusions, and overt hallucinations in a few users. Chronic cough and bronchitis are noted in marijuana users. Marijuana smoke is more potent than cigarette smoke, and more destructive pulmonary effects can be expected.

More research is clearly needed to further understand all the marijuana complications. Some studies suggest that marijuana reduces male sperm count, induces amenorrhea, interferes with DNA functioning at a cellular level, and may induce immunologic dysfunction. Further research is necessary to understand the full effects of various levels of marijuana use on specific individuals. The fact that marijuana remains in the body for up to 30 days after a single episode is worrisome. Marijuana leads to thousands of motor vehicle deaths each year. The effect on offspring when pregnant females use marijuana can be quite negative. Young people must be thoroughly educated to abstain from using it. Unfortunately, it enjoys widespread acceptance among both adults and adolescents.

Tobacco

Tobacco is another widely abused drug in modern society (Slade, 1993). Profound physical addiction or chemical dependency is characteristic of tobacco use. Today's teenage smokers eventually become adults with significant risks for emphysema, lung cancer, laryngeal carcinoma, other cancers, heart disease, and other medical disorders. Lung cancer is now a more common cause of cancer deaths in adult females than breast cancer due to the increase in women smoking over the past few decades. Smoking cigarettes leads to chronic exposure to many detrimental chemicals, such as tar, nicotine, benzopyrene, carbon monoxide, arsenous oxide, radioactive polonium compounds, and others.

Tobacco can also affect a developing fetus. Research has noted lower birthweight from mothers' smoking during pregnancy. In addition, smoking during pregnancy, as well as after birth, is now considered a risk factor for Sudden Infant Death Syndrome. And there are other possible effects. A case-control study of genetics and environmental causes of human facial cleft defects was conducted by the National Institutes of Dental Research of the National Institutes of Health. Preliminary analysis of the collected data revealed associations between increased risk of cleft lip and palate and maternal and paternal smoking (*Iowa Disease Bulletin*, Volume 18, Number 2, 1995).

The negative effects of passive smoking are well-established (Committee on Environmental Hazards, *Pediatrics*, 1976 and 1991; Samet, et al., 1994). Though legal and well accepted, tobacco is a drug whose use must be discouraged. Another disturbing trend is the recent increase among young people in use of chewing tobacco which will lead to a dramatic rise in oral cancer within a generation.

Cocaine

Cocaine is a central nervous system stimulant which can be taken intranasally, intravenously, by inhalation, and orally. In the past, cocaine was often used in the form of a powder of the hydrochloride salt made from an alkaloid present in coca leaves. Alkaloidal cocaine or free base is now widely available in a form used for smoking called "crack" or "rock." Crack is mainly pure cocaine and can be very suitable for smoking ("freebasing") in a "base pipe." It can be crushed, mixed with tobacco, and smoked in a

cigarette. It induces an intense euphoria which is short lived and followed by fatigue and irritability. Tolerance and severe psychological and physiological addiction occur.

Various side effects include nasal septum infection and perforation, tachycardia, hypertension, hyperpyrexia, seizures, ventricular arrhythmia, angina pectoris, myocardial infarction and sudden death. Previously, cocaine powder or "snow" was quite expensive and not available to all. Crack, however, is now widely available and relatively inexpensive, posing a serious problem for youth (Brown and Coupey, 1993).

Hallucinogens

The hallucinogens PCP and LSD (see Table 52) are still seen though they are not as common as they were in the 1970s. They are taken orally and produce an intensive distortion of reality. Tolerance to these chemicals is well known (Brown and Coupey, 1993). Psychoses have developed in some users, as well as the classic "flashback" phenomenon which can be precipitated by marijuana and antihistamines. Overdosing with these agents produces a variety of symptoms including respiratory depression, coma and death. Bad reactions or "trips" may respond to diazepam or haloperidol.

DRUGS FREQUENTLY ABUSED

1. Alcohol
2. Marijuana
3. Tobacco
4. Cocaine
5. Hallucinogens
 - a. Lysergic acid diethylamide (LSD)
 - b. Phencyclidine HCL (PCP)
 - c. Others
6. Amphetamines
7. Barbiturates
8. Narcotics
9. Hydrocarbons and other solvents
10. Miscellaneous

Table 52

Amphetamines

Amphetamines are a classic central nervous system stimulant which leads to anxiety, hyperactivity, hypertension, tachycardia, insomnia, anorexia with weight loss, mydriasis, and/or hyperhidrosis. They can be used to reduce fatigue, lose weight, induce euphoria, and attempt improvement of work or sports performance. Amphetamines can be taken orally, subcutaneously and intravenously. Tolerance and abstinence or withdrawal syndrome (apathy, sleep dysfunction and depression), are classic. Possible complications from using an infected needle include infections such as hepatitis, endocarditis, HIV infection, personality changes, psychiatric disturbances and others. Overdose can lead to hypertension, mydriasis, hyperthermia, seizures, cardiac arrhythmias, and death.

Barbiturates

Barbiturates are classic central nervous system depressants called hypnotic-sedative drugs. Physical addiction, tolerance and abstinence syndromes are noted; the latter is characterized by emesis, anxiety, postural hypotension, delirium, seizures, and even death. Acute effects from oral or intravenous use include slurred speech, euphoria, lethargy, ataxia, and myosis. Overdosage can occur with hypotension, respiratory depression, bullous skin lesions, coma, and death. Barbiturates should not be prescribed for young people, except with extreme caution.

Opiates

Opiate narcotics were very common in the 1960s and are still noted in today's society. Heroin can be taken in a snuff form, subcutaneously or intravenously. Intense euphoria, tolerance, narcotic abstinence syndrome, physical addiction and psychological dependency are associated with heroin use. Other abused narcotics include meperidine, codeine, methadone, morphine, propoxyphene, pentazocine and others. Medical complications are numerous including multiple skin infections, hepatitis, endocarditis, lung disease (as pulmonary edema and pneumonia), tetanus, amenorrhea, peptic ulcer, osteomyelitis, and others. Heroin overdose can result in respiratory depression and death. A withdrawal syndrome is observed in newborns of pregnant women who abuse narcotics. A resurgence of narcotic abuse has been noted in the 1990s (Brown and Coupey, 1993).

Solvents

Solvents are central nervous system depressants which cause transient euphoria, and they are commonly abused by young adolescents (Brown and Coupey, 1993). There are many types of solvents (see Table 53). The chemicals can be placed in a rag or in a plastic bag and then inhaled. A variety of complications can be noted including respiratory tract irritation, cardiac arrhythmias, and even death. Renal or hepatic toxicity can occur with trichloroethylene use, and lead poisoning can result from gasoline sniffing.

TYPES OF SOLVENTS

1. Glue (toluene)
2. Cleaning fluids (trichloroethylene)
3. Aerosol sprays (freon)
4. Gasoline
5. Lighter fluids (with naphtha)
6. Nail product removers (acetone)
7. Nitrous oxide
8. Nitrites (amyl and butyl)
9. Others

Table 53

Treatment Of Substance Abuse

Placement criteria for treatment of substance abuse disorders have been established by a joint effort of the American Society of Addiction Medicine and the National Association of Addiction Treatment Providers (Hoffmann, 1991). The emphasis is on a continuum of care through several outpatient and inpatient levels, utilizing a biopsychosocial perspective (Hoffmann, 1993). Family therapy treatment is a critical part of the overall therapy approach for adolescents with substance abuse disorders. High levels of family conflicts and a low degree of bonding between youth and parents increase the risk of substance abuse in adolescents (Hawkins and Fitzgibbon, 1993). Both permissiveness and extreme authoritarian parenting styles are predictors of later drug abuse in children. Therapy

should address poor parenting skills, as seen in parents who provide poor monitoring of their children, who offer limited rewards for positive behavior, and excessively severe, as well as inconsistent, punishment for their children's negative behavior.

Adolescents can develop a co-dependent role in families with drug-abusing parents in which the youth is forced to assume the identity of a caretaker and assumes responsibility for others in the family. The alcoholic parent may thus be enabled to continue dysfunctional behaviors by denying addiction and by co-dependent family members who protect, cover up and minimize the parent's substance abuse so that the family secret is maintained. Children who are co-dependent may develop a variety of difficulties, including under-achievement, compulsive or abusive behaviors, substance abuse, academic failure, conduct disorders and others.

A variety of prevention and education strategies has been developed for today's society which is permeated with substance abuse at all levels of society (Werner, 1991; Hoffmann, 1993). However, there is little evidence that increased knowledge of substance abuse ALONE changes behavior. The emphasis must, therefore, be on enhancing personal and social growth. Youth must be made aware of the negative effects of advertising. They also need to be provided with recreational, educational and community service activities as alternatives to drug use. Programs should be encouraged which enhance self-esteem and self-confidence.

Young people must be given resistance skill training in which they are taught to recognize, handle, and avoid situations where peer pressure to use drugs is high. Students must learn refusal messages and develop the skills to deliver them. Programs can utilize peer leaders and role-play techniques. Skills must be developed which help to cope with life's problems. Communities can involve schools, families, community organizations and even the local media in this important effort. Comprehensive community-based prevention programs can be developed. Parent groups which are helpful include Mothers Against Drunk Driving (MADD), National Federation of Parents for Drug-Free Youth (NFP) and Unified Parents of America (UPA).

Drug Use and Abuse in Adolescent Athletes

For centuries, athletes have used various drug mixtures in an attempt to improve their athletic performance. Agents which have been used include oxygen, amphetamines, vitamins, anabolic steroids, testosterone, ephedrine, iron, blood and many others (see Table 54). The teenage athlete should be carefully counseled about drug safety and that no substance consistently improves the performance of a well-trained individual (Luckstead and Greydanus, 1993). Athletes should also be informed that the use of these agents has considerable potential to cause physical and

DRUGS AND OTHER SUBSTANCES MISUSED BY ADOLESCENT ATHLETES

1. Anabolic steroids
2. Amphetamines
3. Caffeine
4. Vitamins
5. Sodium bicarbonate
6. Non-steroidal anti-inflammatory drugs (ibuprofen, mefenamic acid, naproxen, others)
7. Ephedrine
8. Iron
9. Blood
10. Oxygen
11. Dimethyl sulfoxide (DSMO)
12. Pangamic acid ("Vitamin B₁₅")
13. Diuretics
14. Other illicit drugs
 - a. Alcohol
 - b. Marijuana
 - c. Tobacco
 - d. Hallucinogens (lysergic acid diethylamide and phencyclidine hydrochloride)
 - e. Barbiturates
 - f. Opiate narcotics
 - g. Glue solvent
15. Others

Table 54

psychological damage. Misuse of drugs, or the doping phenomenon as it is called, should be discouraged (Foley and Schydlower, 1993).

Anabolic steroids are a class of chemicals which are synthetic derivatives of testosterone and represent the drug class most abused by adolescent athletes (Johnson, 1991). Such drugs include methandrostenolone (Dianabol), nandrolone decanoate (Decaduraboline), stanozolol (Winstrol), oxymetholone (Anadrol-50), and others. Dianabol has been discontinued because of the high level of abuse by athletes. If athletes take high doses of anabolic steroids (and some of the androgenic steroids) while undergoing heavy resistance training, there may be an increase in body weight and muscle mass; there is an increase in water retention and lean body mass. The exact effects of anabolic steroids are complex and not fully defined. The effect of resistance training is important as health volunteers who have taken these drugs without training show no increase in muscle strength or size. Some experiments have noted that inexperienced weight lifters taking anabolic steroids may experience an increase in body weight but not strength.

Whether or not athletes get a significant increase in athletic performance remains controversial. What is clear is that there are many unwanted side effects to such drugs. Many athletes, however, are convinced that these drugs are valuable and worth the risk, even in very high doses. The therapeutic doses of such drugs, as used for treatment of various medical disorders, is 8 - 30 mg, depending upon the particular drug. When taking several drugs together in a method called "stacking," some athletes use up to 200 mg per day. Some female athletes have tried to get a high enough dose to produce expected or desired results on muscle mass without such unwanted side effects as masculinization. Athletes at particular risk for use of anabolic steroid abuse include those engaged in such sports as weight lifting, shot putting, discus throwing, body building, sprinting, football and wrestling.

Side effects of anabolic steroids include gynecomastia and hair changes, fluid retention, personality changes, gastric ulcers, hepatic neoplasms, hyperglycemia and others. Also, the bony maturation process can be accelerated in growing athletes with early closure of the long bone epiphyses resulting in shortened final adult

height. An increase in tendon injuries has also been reported in teenagers on anabolic steroids. Masculinization of females may occur with such changes as hirsutism and clitoromegaly. Hepatocellular carcinoma-induced death can occur in athletes taking anabolic steroids—an example of a tragic side effect. There can also be liver damage and peliosis, hepatitis, prostatic enlargement and acne development. Anabolic steroids decrease glycoproteins (FSH and LH) with decreased spermatozoa, decreased testosterone levels, and reduction in testicular size. The reduction in testicular size is reversible but abnormalities of germinal elements can persist for several weeks after discontinuation of these drugs. To avoid the reduction in testicular size, some athletes take intramuscular Human Chorionic Gonadotropin (HCG). Because anabolic steroids reduce high-density lipoprotein (HDL,) a possible increase in cardiovascular risk occurs. One case of renal tumor (Wilm's tumor) has been reported. Psychologic changes have also been noted including an increase in aggressiveness, irritability and depression.

Caffeine is a xanthine derivative which may improve performance in steady endurance activities which rely on fat for fuel; caffeine increases lipid metabolism by releasing free fatty acids from adipocytes and by stimulating catecholamine activity. Studies have noted that ingestion of two to three cups of coffee increases the endurance of individuals on bicycle ergometers, leading to exhaustion. It seems to reduce the perception of fatigue and allow further performance. However, an excessive amount increases sympathomimetic stimulation which can interfere with overall athletic performance. Its diuretic effect can also interfere with performance. Persons with excessive caffeine amounts, defined as over 15 mcg/ml in the urine, are banned from Olympic competition.

There are a variety of other agents (see Table 54) which can be abused by athletes in an often fruitless attempt to improve their athletic performance. Despite the massive intake of multiple vitamins, there remains no evidence that such an addition will be of real benefit to the athlete. A well-balanced diet with appropriate training is the key to maximizing such performance. However, new vitamins/supplements have been developed as part of this craze over "vitamin therapy." The food additive, pangamic acid, (erroneously called vitamin B₁₅ by some) is a good example of this unfortunate trend. Sodium bicarbonate has

been used to delay fatigue during bouts of exercise that are limited by acidosis; this may be helpful in cases where the blood flow increases to accommodate extra exertion via by-products of the increased muscle work.

Non-steroidal anti-inflammatory agents have been used to relieve pain and allow athletes to increase their performance despite painful injuries which can lead to greater, more permanent injuries. Such medications have erroneously been used to “heal” muscle soreness faster after exercise. Side effects of this medication include gastrointestinal bleeding, reduced platelet aggregation, reduced renal perfusion, increased salt/water retention, and/or thermal regulation dysfunction with resultant heat illness.

Another agent falsely used as an “anti-inflammatory” agent by athletes is DMSO (dimethyl sulfoxide). This chemical is available in over-the-counter preparations and is rubbed on sore or injured areas. Its effectiveness as an anti-inflammatory agent has never been demonstrated by research and it is not produced under standards acceptable for human use. As a result, its use should be discouraged until such time as these problems are resolved.

Ephedrine is an example of a medication which can have beneficial effects in disease states (such as asthma) but which is not acceptable for athlete use, according to various committees on sports medicine. Ephedrine’s sympathomimetic action gives the user an unfair advantage. Therefore, it is banned. However, such beta-2 agonists as terbutaline and salbuterol are accepted in the Olympics if the athlete has documented asthma and informs the Olympic Committee of its use. The purpose is to allow the athlete proper treatment of a verified disorder without allowing an unfair advantage over competitors. Athletes should win by superior performance secondary to better skill and training not because of the use of drugs or so-called ergogenic aids (Foley and Schydlower, 1993).

As noted in Table 54, there are other drugs and substances abused by athletes. The use of various diuretics to lose weight quickly is not unusual for wrestlers. The use of such medications can lead to increased weakness, resulting in a wrestler being injured by a stronger opponent. Electrolyte dysfunction and other medical side effects of diuretics may complicate the picture. There is a report about a high school wrestler who suffered a pulmonary embolism while using such a regimen. Blood doping (“blood boosting” or “blood packing”) is an attempt to use one’s

own blood through intravenous infusion to increase aerobic performance. It is impossible to detect by laboratory tests and the frequency of use among athletes is unknown.

Unfortunately, there are no broad programs for prevention and treatment of substance abuse. Overall treatment goals are to prevent drug abuse; and when it does occur, to interrupt its use, maintain non-use, and help the individual to develop a chemical-free lifestyle. The key to all of this is providing young people with good reasons to stop substance abuse, and more importantly, to provide good reasons not to use drugs in the first place. To prevent drug use, children as early as the first grade can be helped to develop long-term healthy attitudes regarding drugs and their use. Education should occur in the home and continue in school and religious training. A major problem to overcome is the powerful drug use messages children receive from peers, media and society in general (Strasburger, 1993). Those at increased risk for drug abuse must be identified and given special attention. It is important to intervene early with susceptible young people because use of gateway drugs can lead to polyabuse.

Another major problem is the general apathy found in society regarding attempts to deal with the problem of substance abuse. Depressed youth often turn to drugs, resulting in addiction. Drug dependency and some forms of depression are currently viewed as biologic disorders which require behavioral therapy. Alternatives to drug dependency must be sound and emphasized — such as sports, recreational activities, involvement with religion, job training, volunteer assignments, and others.

Once the drug-dependent youth is identified through careful assessments, a variety of programs are available including inpatient, short-term treatment; residential care; outpatient with partial hospitalization; and others (Hoffmann, 1993). Some programs are basically psychiatric in nature while others emphasize the “12 step” Alcoholics Anonymous program (Narcotics Anonymous, Al-Anon, and Families Anonymous). A careful assessment of each patient should be conducted to pinpoint underlying causes of substance abuse and to identify the most appropriate treatment program for the young person.

A multi-disciplinary approach is recommended for many youth, emphasizing family therapy — seeking to get the youth back into his/her family (if there is one). The family dysfunction seen today in general society complicates this task. Children of alcoholics represent a

Table 56 reviews the recommended daily dietary allowances (RDA) for youth as developed by the Food and Nutrition Board of the National Academy of Sciences. These RDAs do not measure individual nutritional status. They serve as general, chronologically-orientated indicators which, if followed, can preclude severe nutritional deficiencies with some probability.

Nearly all of the nutrients listed in Table 56 can be found in a well-balanced diet. Protein is found in meat (beef, lamb, pork, veal), poultry, fish, dairy products and

eggs. Those on a vegetarian diet can get needed protein from dairy products, eggs, beans, cereal/grains, nuts, and various seeds. Iron can be found in lean meats, eggs, dried beans, peas, green leafy vegetables, dried fruits, nuts, fortified wheat products, and whole grain products. Calcium is found in dairy products such as milk, in dark green leafy vegetables, as well as in some nuts and legumes. Zinc is found in various meats, in nuts, cheeses, wheat germ and beans. Table 57 identifies some good vitamin sources.

RECOMMENDED DAILY DIETARY ALLOWANCES								
	AGE	ENERGY	PROTEIN	WATER SOLUBLE VITAMINS				
	(Years)	(kcal) calories	Protein (g) in grams	Ascorbic Acid (mg)	Thiamine B ₁ (mg)	Ribo- flavin B ₂ (mg)	Niacin (mg) NE	Vitamin B ₆ (mg)
MALES	11-14	2500	45	50	1.3	1.5	17	1.7
	15-18	3000	59	60	1.5	1.8	20	2.0
FEMALES	11-14	2200	46	50	1.1	1.3	15	1.4
	15-18	2200	44	60	1.1	1.3	15	1.5
PREGNANT OR LACTATING FEMALES		+300	+60	+70	+1.5	+1.6	+17	+2.2
		+500	+65	+95	+1.6	1.8	+20	+2.1

	AGE	FAT SOLUABLE VITAMINS			MINERALS				
	(Years)	Vit. A Activity (mcg) RE	Vit. D Activity (mcg)	Vit. E Activity (mg)	Calcium (mg)	Phos- phorus (mg)	Iodine (mcg)	Iron (mg)	Magne- sium (mg)
MALES	11-14	1000	10	8	1200	1200	150	12	270
	15-18	1000	10	10	1200	1200	150	12	400
FEMALES	11-14	800	10	8	1200	1200	150	15	280
	15-18	800	10	8	1200	1200	150	15	300
PREGNANT OR LACTATING FEMALES	+1300	+800	+10	+10	+1200	+1200	+175	+30	+320
			+10	+12	+1200	+1200	+200	+15	+355

Source: Food and Nutrition Board, National Academy of Sciences, National Research Council. (Revised 1989.)

Table 56

A sound diet seeks to limit fat intake to 30% of calories with 1/3 of fat calories coming from monounsaturated fats, 1/3 from polyunsaturated fats, and no more than 1/3 from saturated fats. Protein content should be limited to 15% of the calories, and carbohydrates should constitute 55% of the total caloric intake. Cholesterol should be limited to under 300 mg per day for most adolescents; this is equal to the amount in one egg. Added salt should be limited as should the use of highly salted, processed foods. To keep fat calories down, lean meats and fish instead of high-fat lunch meats and hamburgers are recommended. Baked or broiled foods and vegetables (fresh or steamed) keep fat to a minimum. Two percent milk can be substituted for whole milk, and fiber can be increased by using fresh fruits and vegetables as well as whole grain cereals. Vegetable oils can be added to boost flavor and calories when needed.

Unfortunately, many teenagers do not eat an adequate diet; and they can develop deficiencies in such vitamins and minerals as calcium, iron, Vitamin A, Vitamin B, Vitamin C, folacin, zinc, and others (Bull, 1992; Johnson, Johnson, Wang, et al., 1994). Over half of teenagers eat no breakfast and few eat three "traditional" meals each day. Many teenagers are "snackers" or "grazers," choosing easily available foods. Those with less than three daily meals generally have poorer diets than frequent snackers. The value of foods from the fast food chains (a favorite of many if not most teenagers) remains controversial. Though the protein content is adequate, the food may be high in calories

from fat, high in sodium content, and low in fiber. Consultation with a professional nutritionist is recommended when a young person develops specific dietary difficulties or needs detailed advice on food intake. Appreciation of the cultural aspects of nutrition in adolescents is important because many young people come from various ethnic groups (Luder, 1992).

Some female adolescents have an increased need for Vitamin C, Vitamin B₁ (thiamine), and Vitamin B₂ (riboflavin). All adolescent girls are of concern from a nutritional viewpoint because of growth needs, poor food choices, and weight control measures. Those who smoke and use oral contraception are at additional risk since Vitamin B and C needs are increased under these conditions. A well-balanced diet is very important for individuals who are already at risk for vitamin and mineral deficiencies. Individuals with iron deficiency may need iron supplementation; and those who are unable to eat a proper diet need multi-vitamin supplementation.

Teenage athletes may have special nutritional needs due to their vigorous exercise schedule. A health care professional who is knowledgeable in nutrition and sports can be very helpful for the serious teenage athlete. A diet consistently high in carbohydrates with adequate water is important for the youth competing in long- or short-duration events; this allows the athlete to develop maximum outbursts of anaerobic energy, as supplied by adenosine triphosphate and phosphocreatinine. On the other hand,

FOOD SOURCES OF VITAMINS

Vitamin A	Whole milk, fruits, yellow vegetables, fortified margarine, butter, liver, some green leafy vegetables
Vitamin C	Citrus fruits, lettuce, green leafy vegetables, broccoli, uncooked potatoes, tomatoes, strawberries, and currants
Vitamin D	Milk, canned fish, egg yolk, and sunlight
Vitamin B₁₂	Fish, eggs, milk, fortified soy milk meals
Thiamine	Beans, nuts, peas, pork, wheat products (enriched and whole grain)
Folacin	Fresh oranges, nuts, liver, navy beans, dark leafy vegetables and whole wheat products

Table 57

athletes involved in endurance sports need advice on improvement of both aerobic and anaerobic energy metabolism. Such advice centers on increasing the glycogen content of muscles or the infrequently needed glycogen-loading programs. Also, proper water replacement must be assured for athletes exercising in hot, humid conditions.

Loss of Body Weight

An adequate diet is necessary for young people, whether maintaining or changing body weights. Some teenagers wish to lose weight because they feel they are overweight or because they seek to develop optimal body composition. Though an average male teenager may have a body-fat-to-body-ratio of 14 - 16%, the percents for champion high school athletes are often much lower ratios, and can be even as low as 5 - 7%. Likewise, untrained female adolescents might have 20 - 22% body fat, while trained women athletes can be at 14 - 16% or lower.

Thus, many adolescent athletes seek to reduce their weight to gain better fat-weight ratios to improve their athletic performance. This can be done if proper guidelines are established to insure gradual weight loss (not over 2 pounds per week) and adequate hydration. An individual program with close health care professional supervision is important to insure a basic diet of 1,800 to 2,000 kcal per day for the male or 1,600 to 1,800 kcal for the female. This diet should be combined with a daily increase of energy expenditure of 600 kcal or more.

Any weight loss program should not compromise water intake, slow growth, reduce lean body weight or interfere with fluid and electrolyte status. Weight loss in some wrestlers has been linked to reduced testosterone levels. The use of drugs (diuretics or cathartics) or measures to increase sweating, such as wearing plastic suits, should be avoided. Also, it is important that individuals desiring weight loss be separated from teenagers who are developing anorexia nervosa (discussed later). The desire for weight loss in adolescent athletes can lead to eating disorders. Coaches and advisors to students must monitor weight and dietary practices, plus be alert to possible problems.

Gaining Weight

The teenage athlete wishing to gain weight must avoid drugs like cyproheptadine and anabolic steroids. He or she should also avoid diet plans based on an increase of fatty

foods. An individualized program can be developed to combine increased, balanced calories with a muscle training program to gradually reduce fat stores, not lean body mass. Protein and vitamin supplementation is expensive and not necessary or helpful. As with all these plans, consultation with a knowledgeable nutritionist is very helpful.

Obesity

Obesity remains one of the most frequent nutritional dysfunctions noted in teenagers. The National Health and Nutrition Examination Surveys (NHANES cycles I, II and III, Bandini, 1992) have been surveying the prevalence of obesity in American children and youth since 1971. The 1988 - 1991 NHANES cycle III study identified 21% of adolescents 12 - 19 years of age as being overweight using body mass index (BMI) as criteria — up from 15% in the 1966 - 1980 NHANES II study. (*MMWR* 43(44): 818-821, 1994).

Obesity compounds the common adolescent problem of low self-esteem and can disrupt psychological development with the problem continuing into adulthood. An obese young person may have difficulty dealing with peers, seriously affecting normal adolescent development. Potential health complications noted later in life include hypertension, coronary disease, diabetes, cholecystitis, premature joint destruction, premature death, and others. Idiopathic (exogenous) obesity is usually caused by a variety of complex factors, including genetics, excess food intake, and a reduced exercise lifestyle. According to some research, other possible contributors are low socioeconomic status and/or being Black. Depression can play a primary or secondary role in many cases. Obesity remains a complex disturbance which causes frustration for patients, their families, and health care professionals.

Most causes of adolescent obesity are idiopathic and related to childhood obesity. In a few instances, the cause may be secondary to Cushing's Syndrome, prolonged use of corticosteroids, hypothalamic lesions, Prader-Willi syndrome and other metabolic disorders. A careful medical evaluation will distinguish the common idiopathic or exogenous type of obesity from conditions that are secondary to primary endocrinological or other organic disorders (Hofmann and Greydanus, 1989, 1997).

Treatment of exogenous obesity is difficult (Rees, 1990). Sensible reduction in caloric intake with an increase in physical activity will result in slow, steady weight

reduction. This requires considerable motivation often not found in many youth or their family members. Any weight reduction program should be under the supervision of a knowledgeable health care professional. It is not enough for the parent and/or health care professional to be interested in the youth's weight loss. The young person must also be motivated to lose weight. A poorly designed program can induce a sense of failure in the youth, with resultant increased depression. If the individual does not want to lose weight, the health care professional should be patient and wait until motivation develops.

A variety of diets have been developed in the past to encourage weight loss, including high or low carbohydrate diets, high or low protein diets, high or low fat diets, protein-sparing/modified fat diets, and others. In general, these are ill-advised and some (as the Zen macrobiotic diet or the liquid protein diet) are very dangerous and can lead to major nutritional deficiencies and increased morbidity as well as mortality. The health care professional should help adolescents avoid the negative consequences of diets which greedy diet creators have developed for their own welfare. The individual needs to develop a life-long pattern of sensible caloric intake balanced by appropriate energy expenditure. Crash-diets should not be encouraged because they are not helpful in causing persistent weight loss. They should not be used for extended periods of time, and they may have negative side effects. Youth who consume a vegetarian diet must be encouraged to conform to established guidelines (Johnston, Haddad and Sabate, 1992).

Young people must learn that increases in body weight and fat are normal, necessary aspects of puberty and that normal fat accumulation in females more than doubles at this time — increasing from 8% prior to puberty to 22% by the end of pubertal growth (Alon and Storey, 1993). They should also know that the development of a healthy body weight is based on a genetically determined body build/shape and not on a culturally-driven shape/weight ideal. Young people should aim for a healthy weight range and develop a pattern of regular exercise such as 30 minutes of vigorous activity, performed three or more times a week. Weight maintenance (versus overt weight loss) is important for children and young teens so that growth is not compromised. The core of a healthy diet should reflect a healthful, low-fat eating pattern.

Hyperlipidemia

Primary hyperlipidemia is a genetically caused disorder which represents a major risk factor for early development of coronary heart disease. Detection and treatment in adolescents is important to prevent premature death in adulthood (Hardoff and Jacobson, 1992). Secondary hyperlipidemia can occur with various disorders such as those listed in Table 58. The diagnosis of hyperlipidemia should be considered in any adolescent or young adult with a first-degree relative under age 55 with coronary artery disease or where hyperlipidemia is a known family risk factor.

Although controversy exists, it is generally agreed that fasting cholesterol levels over 190 mg and serum triglycerides above the 110-140 mg/ml range are considered to be elevated (Gagliano, et al., 1993). If fasting serum cholesterol or triglycerides or both are elevated, further assessment is necessary, including evaluation for underlying organic disorders and diagnosis of the specific hyperlipidemia type. More specifically, increased levels of low-density lipoprotein cholesterol (LDL-C) and decreased levels of high-density lipoprotein cholesterol (HDL-C) are correlated with arteriosclerotic cardiovascular disease in adults (Heald, 1990).

There are six classic types of primary hyperlipidemia: I, II (A,B), III, IV, and V. Type IIA, IIB and IV account for 95% of adult types. In type IIA, there is an increased cholesterol level and an even greater increase in low-density beta lipoprotein. In type IIB, there is an increase in beta

CAUSES OF SECONDARY HYPERLIPIDEMIA

1. Diabetes mellitus
2. Hypothyroidism
3. Nephrotic syndrome
4. Chronic renal disease
5. Obstructive liver disease
6. Alcohol abuse
7. Other drugs (glucocorticosteroids, oral contraceptives)

Table 58

lipoprotein, very low-density lipoprotein, pre-beta lipoprotein, triglycerides, and cholesterol. In type IV, there is an increase in triglycerides and a marked increase in pre-beta lipoprotein.

The symptomatology of hyperlipidemias varies with the type and duration of the specific disease complex. Most affected youth have no clinical evidence. Those with long-standing lipid elevations may develop xanthomas. Individuals can develop a variety of symptoms in adulthood including coronary artery disease, pancreatitis, xanthomas, aortic stenosis, retinal damage and many others.

General treatment measures include controlling blood pressure, maintaining ideal body weight, no cigarette smoking and regular exercise (McGowan, et al., 1994). Individuals with elevated lipid levels should be referred to health care professionals knowledgeable in the care of these disorders. Lipid-lowering drugs include cholestyramine, clofibrate, nicotinic acid, lovastatin, pravastatin, gemfibrozil and probucol (Hardoff and Jacobson, 1992). Dietary measures may be sufficient for some.

Remember, it can be difficult for young people with hyperlipidemia to follow a special diet or to stay on specific medications. It is difficult at that age to feel different. Lack of compliance with recommended treatment regimens is common. Patience and tolerance are needed since it may be a number of years before sustained compliance is noted. Careful and continued assessment of the lipid levels from adolescence through adulthood is necessary.

Anorexia Nervosa

This eating disorder is characterized by a restricted and disordered eating pattern and a fear-of-becoming-fat attitude toward eating in which the youth seeks to lose weight by a marked reduction in caloric intake. The weight loss can become very severe with a 20 - 40% loss of original body weight. There is no primary organic or psychiatric disorder that causes the weight loss. Clinical evaluation reveals an individual with a distorted body image in which the adolescent perceives herself/himself as fat despite obvious emaciation. Over 95% of cases occur in females, and the diagnosis, by definition, starts under age 25 — often in early adolescence. In order to achieve low body weight, periods of excess physical activity may develop in addition to the reduction in caloric intake. Self-induced vomiting may

develop as well (bulimia). The need to lose weight can continue despite the attempts of others to reverse it.

A variety of physical and metabolic abnormalities are often found in anorexics and are reflective of the characteristic state of severe malnutrition: amenorrhea (Golden and Shenker, 1992), lanugo hair, hypothermia, bradycardia, hypotension, electrolyte abnormalities, iron deficiency anemia and many others (Comerci, 1990; Fisher, 1992). Other causes of weight loss must be considered in the differential diagnosis, including inflammatory bowel disease, malignancy, chronic infection, or severe depression. The cause(s) of anorexia nervosa is complex and not really understood (Hofmann and Greydanus, 1989, 1997). The impact on young females of media messages urging unhealthy thinness is unclear but worrisome to health care professionals (Guillen and Barr, 1994).

Treatment for this disorder varies and is controversial as well (Kreipe and Uphoff, 1992). Attention toward dehydration and electrolyte dysfunction as well as other medical abnormalities is important. The psychiatric/psychological treatment of this disorder involves a variety of outpatient and/or inpatient therapy modalities: individual psychotherapy, group psychotherapy, family therapy, nutritional counseling (Schebendach and Nussbaum, 1992) and possibly anti-depressant medications. A variety of therapeutic approaches have been developed. Early diagnosis and treatment of this potentially fatal disorder is best. Mortality rates of 5 to 20% are reported in adults.

Bulimia

Another well-known eating disorder is bulimia (bulimia nervosa) in which the individual engages in bingeing-purging cycles which become uncontrollable (Sigman and Flanery, 1992). The incidence of bulimia is currently controversial. Previous studies noted a 5 - 15% range in the older adolescent, while more recent research has reduced this to as low as 1 - 2% of college females. Bulimia may become a part of anorexia nervosa or may remain a separate disorder by itself. Large amounts of food (usually easily consumed carbohydrates) are eaten in private and within a short period of time. The bingeing stops only if the individual is discovered, develops severe abdominal pain, or falls asleep. The individual becomes concerned about the bingeing and seeks to remove the food by purging with self-induced vomiting. The cycles can vary in frequency, up to several times per day.

There is often much denial regarding this activity and its need for treatment. An underlying depression is reported in many, if not most, cases. Medical side effects include tooth enamel erosion, pharyngitis, gastritis, hiatal hernia, hypokalemia, and others (Fisher, 1992). Further complications can be seen with the use of diuretics and cathartics. Severe constipation and renal and liver abnormalities have been reported in such cases. Treatment, as with anorexia nervosa, involves attention to medical and psychiatric difficulties and a variety of treatment approaches have been reported (Schebendach and Nussbaum, 1992).

Others

Young people are at risk for other nutrition-related difficulties, including dental caries and iron deficiency anemia. Poor eating habits involving excess sugar intake and poor dental hygiene result in a high rate of dental disorders in youth — including dental caries and periodontal disease. Only 4% of youth are without caries and the average 12-to-17-year-old has 6.2 diseased teeth (decayed, missing or filled). Improved dental hygiene (including proper flossing and brushing techniques) and better eating habits may reduce the incidence of this very widespread adolescent disorder.

Finally, iron deficiency anemia can occur in virtually any young person — male or female. Estimates vary, but perhaps 20% are at considerable risk; and 3% of males, along with 8 - 10% of females, have overt iron deficiency anemia. It is the most common cause of anemia in young people and is precipitated by the rapid growth of adolescence along with menstruation and a diet poor in iron. Athletes involved in rigorous physical training (such as distance running) may have a greater risk of iron store depletion (Rowland, et al., 1991).

Iron deficiency anemia can be defined by a hemoglobin level under 11.5 g/dl or a hematocrit under 35% in 12-year-old males or females; a hemoglobin under 12.0 (hematocrit under 36%) in 12-to-18-year-old females; and hemoglobin under 12.5 to 13.0 (hematocrit under 38%) in 12-to-18-year-old males. Studies have correlated the hemoglobin and hematocrit levels with the various Tanner Stages. Studies also show that Blacks average a hematocrit 1 - 3% lower than whites. Improvement in the iron content of the diet and/or iron supplementation will adequately treat this condition.

CONCLUSION

This manual presents important concepts of adolescent growth and development in the belief that assimilation of such knowledge will enable interested health care professionals to better understand and more effectively deal with youth. Various stages of adolescence are reviewed: psychological, cognitive, sexual, pubertal, and miscellaneous. Legal rights of minors are also briefly discussed. The manual outlines basic principles of adolescent health care including various factors affecting care, the general demography of illness, and an approach to the adolescent maintenance examination is presented. General counseling issues are then discussed, followed by a review of reproductive issues of adolescence with major emphasis on oral contraception. An overview on sexually transmitted diseases, substance abuse disorders and nutritional concepts is presented.

The authors hope that such an outline will be of help to readers and invite their feedback. Adolescence is a critical time of human development which fully deserves collective interest as well as concentration. Adult pressures must not minimize helpful efforts during this critical life phase. Evaluation and treatment of youth is an exciting challenge and those health care professionals entrusted with adolescents are fortunate individuals who have been given a major responsibility. Everyone should remember this when they are working with youth, whether the teenagers are one's own or are others' children. Parents should also be involved.

A delicate but important balance must be developed by health care professionals seeking to help youth to successfully negotiate their adolescent tasks, as well as to help parents effectively cope with the inevitable changes time brings to their children. It is a difficult, perplexing, yet potentially rewarding task. Young people represent the future. What could be more important than to positively affect them through proper nourishing and guidance?

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