Pregnancy Prevention in Adolescents

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Although the pregnancy rate in adolescents has declined steadily in the past 10 years, it remains a major public health problem with lasting repercussions for the teenage mothers, their infants and families, and society as a whole. Successful strategies to prevent adolescent pregnancy include community programs to improve social development, responsible sexual behavior education, and improved contraceptive counseling and delivery. Many of these strategies are implemented at the family and community level. The family physician plays a key role by engaging adolescent patients in confidential, open, and nonthreatening discussions of reproductive health, responsible sexual behavior (including condom use to prevent sexually transmitted diseases), and contraceptive use (including the use of emergency contraception). This dialogue should begin before initial sexual activity and continue throughout the adolescent years. (Am Fam Physician 2004;70:1517-24. Copyright© 2004 American Academy of Family Physicians.)

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See page 1429 for definitions of strength-of-recommendation labels.

Each year in the United States, approximately 1 million adolescents, or 10 percent of females 15 to 19 years of age, become pregnant.[1] These pregnancies, which account for 13 percent of all births, usually are unintended and occur outside of marriage.[2] Since 1991, the adolescent pregnancy rate in the United States has fallen by 25 percent, from 116 to 87 per 1,000 females 15 to 19 years of age.[3] This decline has been attributed to delayed initiation of sexual intercourse, increased use of contraception, and education about human immunodeficiency virus transmission and pregnancy prevention.[4,5] Despite the decline, adolescent pregnancy remains a major public health problem with lasting repercussions.

Children of teenage mothers are at greater risk of preterm birth, low birth weight, child abuse, neglect, poverty, and death, and they are more likely to have behavior disorders and difficulties in school, and to engage in substance abuse.

In 2001, the U.S. Surgeon General presented "The Surgeon General's Call to Action to Promote Sexual Health and Responsible Sexual Behavior,"[6] which discussed the need for a national dialogue on this topic, expanding research into sexual health, and improving health care access and social interventions to increase responsible sexual behaviors.

Impact of Teenage Pregnancy

Compared with nonpregnant adolescents, teenage mothers are less likely to graduate from high school and are more likely to score below average in language and reading skills.[7,8] These teenagers also are more likely to have low self-esteem and symptoms of depression.[9,10] Many of them have behavior and substance-abuse problems and lack the resources to fully foster the emotional development and enrichment of their children's lives.[11-13]

Children of adolescent mothers are at greater risk of preterm birth, low birth weight, child abuse, neglect, poverty, and death.[14-17] They are more likely to have behavior disorders and difficulties in school, and to engage in substance abuse.[18,19] In 1996, the poverty rate among children born to teenage mothers was 42 percent, twice that of the overall rate in children.[20] The infant mortality rate (i.e., deaths in infants younger than one year per 1,000 live births) is higher in children of teenage mothers than in other children.[21]

All Americans are affected by adolescent pregnancy. The Annie E. Casey Foundation[22] reports that more than 75 percent of teenage mothers receive public assistance within five years of delivering their first child. The societal cost of caring for these mothers and their children, including medical expenses, food and housing support, employment training, and foster care, is estimated at $7 billion per year.[20]

Strategies for Prevention

Many prevention programs are designed to reduce the number of adolescent pregnancies and sexually transmitted diseases (STDs) in the United States. In general, these programs aim to improve the use of contraception and to modify the high-risk behaviors associated with teenage pregnancy and STDs.

YOUTH SOCIAL DEVELOPMENT

Youth social development programs target social and psychologic skills that are necessary to avoid high-risk behaviors such as early sexual activity. These programs operate on the premise that adolescents who delay sexual activity have high educational aspirations, peers with similar norms, and parent-child relationships characterized by supervision, support, and open communication.[23]

Although weakened by poor design, most studies of abstinence-only programs have failed to show significant improvement in self-reported rates of intercourse or pregnancy.

The Seattle Social Development Project[24] is a program designed to increase students' social skills and attachment to school and family. Eighteen elementary schools were assigned to receive intensive training or the usual education curriculum. In the intensive training arm, teachers and parents received annual training in proactive classroom management, problem-solving skills, child behavior management, and drug use prevention in adolescents. The intervention did not include sex education.

Follow-up of 93 percent of the 349 participants at 21 years showed that students in the intervention group had their first sexual experience later than students in the control group (16.3 years versus 15.8 years; $P < .05$), fewer lifetime sex partners (3.6 versus 4.1; $P < .05$), and fewer pregnancies (38 percent versus 56 percent; $P < .05$). These differences were greater in black and female participants.

In the Children's Aid Society–Carrera Program,[25] 600 disadvantaged New York City adolescents 13 to 15 years of age were assigned randomly to a typical after-school program or one with a comprehensive youth development curriculum. Follow-up of 79 percent of participants at three years showed that the girls in the intervention group had lower odds of being sexually active (odds ratio [OR], 0.5; $P < .05$) and of having been pregnant (OR, 0.3; $P < .05$). Participation in the program had no impact on boys' sexual and reproductive behavior.

The Teen Outreach Program (TOP),[26] another social development program, focuses on volunteer activities. In one evaluation of TOP, 695 high school students from diverse backgrounds were randomized by classroom to TOP or no intervention. Program participants had lower self-reported rates of teen pregnancy, school failure, course failure, and school suspension at one year. The program's success might be a result of mentorship as well as increasing self-esteem through volunteerism.

ABSTINENCE-ONLY PROGRAMS

Abstinence-only programs teach that abstinence is the only certain way to avoid unmarried pregnancy, STDs, and associated health problems; they may not teach about, endorse, or promote contraception use.[27] Such programs became increasingly common after 1996, when Congress allocated $87.5 million per year for distribution to states providing abstinence-only education.

One of the largest and most rigorous studies of abstinence-only programs evaluated the Postponing Sexual Involvement (PSI) program in 31 California counties.[28] PSI is a five-session program taught by trained adults or teenagers. A total of 7,340 students with varied racial backgrounds were assigned randomly to intervention or control groups and were followed for up to 17 months. There was no significant difference in pre- and post-intervention self-reported scores on the initiation of sex, frequency of sex, number of sex partners, use of condoms and other birth-control methods, or reported pregnancy rates.

Studies of other abstinence-only programs also have failed to show significant improvement in self-reported rates of intercourse or pregnancy.[29] However, the evidence is inconclusive because most of the published studies have major design weaknesses (e.g., small sample size, no comparison group, nonrandom assignment, high

attrition rate, inadequate follow-up). Results of larger, more rigorous studies are expected. Mathematica Policy Research, Inc., and the University of Pennsylvania are conducting an independent, federally funded review of Title V Abstinence Education Programs. These reviews have found that, in 700 programs nationwide, most participants report positive feelings about their program experience. Results showing the impact on teenage pregnancy rates are expected in 2005.

COMPREHENSIVE SEX-EDUCATION PROGRAMS

Comprehensive sex-education curricula present abstinence as the most effective method of preventing pregnancy and STDs but also discuss contraception as the appropriate strategy for persons who are sexually active. A review[29] of 28 well-designed experimental studies found that most comprehensive sex-education programs do not adversely affect the initiation or frequency of sexual activity, the number of sex partners, or the reported use of condoms and other contraceptive methods. In fact, many programs were shown to significantly improve these outcomes.

Successful programs vary in their approach. Program characteristics that are important in reducing risky sexual behaviors by teenagers are summarized in *Table 1*.[29]

SEX AND CONTRACEPTIVE COUNSELING

Health care professionals can play a key role in improving contraception use and STD prevention. Success in this regard could have a profound impact on teenage pregnancy rates: the pregnancy rate is 85 percent among young couples who are sexually active for one year without using contraception, and 15 to 30 percent of sexually active teenagers do not use contraception.[30]

The American Academy of Family Physicians (AAFP),[31] the American Academy of Pediatrics (AAP),[32] and the American Medical Association (AMA)[33] advise physicians to provide adolescents with guidance on sexuality and sexual decision making. Physicians are encouraged to engage all young people—boys and girls—in open, nonjudgmental, and confidential discussions during regular office visits. Counseling should include complete and medically accurate information on responsible sexual behavior. These proactive conversations should begin early and continue throughout a patient's adolescence. A model for talking to teenagers about responsible sexual behavior is summarized in *Table 2*.[34]

Emergency contraception is safe and effective, and does not act as an abortifacient.

TABLE 1
Characteristics of Effective Programs to Reduce Adolescent Sexual Risk-Taking Behaviors

Focus on reducing high-risk sexual behaviors.
Present accurate, age-appropriate, and culturally sensitive information about the risks associated with unprotected sexual activity, use of contraceptives, and strategies for prevention of pregnancy and sexually transmitted infections.
Actively involve all participants.
Allow adequate time for interactive exchange.
Teach communication skills necessary to avoid social pressures that may influence sexual activity.
Apply theoretic models that have proved effective in changing high-risk behaviors, such as social influence theory or cognitive-behavior theory.

Adapted from Kirby D. Emerging answers: research findings on programs to reduce teen pregnancy. Washington, D.C.: National Campaign to Prevent Teen Pregnancy, 2001:10.

TABLE 2
Talking to Teenagers About Responsible Sexual Behavior and Contraception

Engage adolescents in confidential, open, and nonjudgmental discussions independent of caregivers.
Progress to an open discussion about sexual behaviors and concerns.
"Are there kids your age who have started dating? Have you?"
"Some girls and boys your age have begun to have sex while others have decided to wait until they are older. How do you feel about it?"
Ask and advise all adolescents about contraception and prevention of sexually transmitted infections.
"What concerns do you have about getting pregnant? If you would like, we can discuss different kinds of birth control."
Ask about the relationship between the patient and the parents, and about their views on dating and sexual activity.
"Would you like to talk about these subjects with me and your parents?"

Information from reference 34.

Fifteen to 30 percent of sexually active teenagers do not use contraception.

Family members are encouraged to be actively involved in sex education efforts, because an adolescent's values and sense of sexual responsibility are influenced by family norms and expectations. However, to maintain confidential and open discussions, the AAFP and AAP recommend that physicians offer adolescent patients the opportunity to have their examination and counseling sessions separate from their parents and guardians, while still encouraging adolescents to involve their caregivers in health care decisions.[31,32]

The Society for Adolescent Medicine[35] defines confidentiality as "an agreement between patient and provider that information discussed during or after the encounter will not be shared with other parties without the explicit permission of the patient." That organization, along with the AAFP, AAP, and AMA,[31-33,35] recommends informing adolescents and their parents about the requirements and limits of confidentiality, because some patients may refuse to give accurate medical information without it. Each state has different laws about confidentiality and consent for adolescent health care, and physicians should be familiar with local regulations.[36]

The AAFP, AAP, and AMA also advise physicians to stress abstinence as the only certain way to prevent pregnancy and STDs.[31-33] However, if an adolescent chooses to become sexually active, he or she must be counseled on appropriate contraceptive options, and condom use should be encouraged regardless of whether another contraceptive method is used.[37] Because condom failure that leads to pregnancy generally is due to improper and inconsistent use, and not defects or breakage,[38] providing adolescents with confidential access to condoms and education on consistent and proper use is a priority.

Many effective contraceptive methods are available *(Table 3)*.[39-41] Discussing common misconceptions, side effects, and other benefits of contraceptives in simple, age-appropriate terms may improve adherence to a chosen contraceptive plan.[42] A history, pregnancy test (if indicated), and blood pressure reading are adequate to begin hormonal contraception. The pelvic examination may be deferred until a later visit.[43] The American Cancer Society[44] now recommends that cervical cancer screening be delayed until three years after the onset of vaginal intercourse or no later than 21 years of age. The Centers for Disease Control and Prevention[45] recommends that all sexually active women 25 years of age and younger undergo annual screening for chlamydial infection.

Once the adolescent chooses a contraceptive and STD prevention plan, the AAP recommends intermittent screening for high-risk behaviors and STDs, and frequent monitoring of the patient's satisfaction with and ability to adhere to the plan.[33] Contraception adherence should be discussed at each visit, emphasizing the plan for missed or delayed doses (if the patient is using hormonal contraceptives), and whether modifications to the plan are needed.

In addition to encouraging appropriate contraceptive use and STD prevention, the AAP advises physicians to educate all sexually active adolescents about the availabil-

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TABLE 3
Contraceptive Options for Adolescents

Method	Failure rate (%)		Dosing	Potential side effects	Advantages
	*Perfect use**	*Typical use†*			
Male latex condom	3	14	Every act of intercourse	Latex allergy	Recommended to be used in addition to another contraceptive; only method that decreases STD, HIV risk
Combination OCP	0.1	5	Daily	Breakthrough bleeding, nausea, headaches, breast tenderness	Decrease in: PID risk, ectopic pregnancy risk, menstrual blood loss, dysmenorrhea, acne
Progestin-only OCP	0.5	5	Daily (within 3-hour period)	Irregular bleeding, breast tenderness, depression	No estrogen‡ Decrease in: menstrual blood loss, dysmenorrhea
Combination contraceptive patch (Ortho Evra)	0.7	0.9	Weekly for 3 weeks (off on 4th week)	Breakthrough bleeding, nausea, headaches, breast tenderness, skin site reaction, less effective if patient is >90 kg (198 lb)	Similar to OCPs but less frequent dosing
Combined hormonal vaginal ring (NuvaRing)	0.65	N/A	Monthly (insert for 3 weeks of each month)	Vaginal irritation, vaginal discharge, headache	Similar to OCPs but less frequent dosing
Progestin-only injection (Depo-Provera)	0.3	0.3	3 months	Irregular bleeding or amenorrhea, weight gain, breast tenderness, acne, depression, possible decrease in bone density	No estrogen‡ Decrease in: menstrual blood loss, dysmenorrhea, PID risk
Copper-containing intrauterine device (ParaGard)	0.6	0.8	10 years	Heavier menses, dysmenorrhea	Easy to use, long-acting, nonhormonal
Levonorgestrel intrauterine system (Mirena)	0.1	0.1	5 years	Breakthrough bleeding in first 3 to 6 months, then hypo- or amenorrhea	No estrogen‡, easy to use, long-acting Decrease in: menstrual blood loss, dysmenorrhea, (possible) PID risk§
Combined hormonal monthly injection (Lunelle) ‖	0.1	N/A	Monthly	Breakthrough bleeding, nausea, headaches, breast tenderness	Better cycle control and quicker return to fertility than progestin-only injection
Single-rod contraceptive implant (Implanon)‖	0 to 0.2	N/A	3 years	Irregular bleeding or amenorrhea, weight gain, breast tenderness, acne, depression	No estrogen‡, easy to use, long-acting Decrease in: menstrual blood loss, dysmenorrhea, PID risk

STD = sexually transmitted disease; HIV = human immunodeficiency virus; OCP = oral contraceptive pill; PID = pelvic inflammatory disease.

**—Percentage of couples who initiate and use a method perfectly who experience an accidental pregnancy within the first year of use.*
†—*Percentage of couples who initiate and use a contraceptive method typically, who experience an accidental pregnancy within the first year of use.*
‡—*Progestin-only formulations may be beneficial in women with atypical migraine headaches or other conditions associated with estrogen intolerance.*
§—*PID risk may increase in the first 20 days after insertion.*
‖—*This device is not currently available in the United States; it is being reviewed by the U.S Food and Drug Administration.*

Information from references 39 through 41.

TABLE 4
Emergency Contraception Methods

Method	*Dosage*	*Time interval**	*Reported efficacy (%)*
Combination oral contraceptives	Two doses of 100 mcg of ethinyl estradiol plus 0.5 mg of levonorgestrel (Plan B), taken 12 hours apart	72 hours	75 to 80
Levonorgestrel	Two doses of 0.75 mg, taken 12 hours apart, *or* One dose of 1.5 mg	72 hours	75 to 80
Copper intrauterine device (ParaGard)	—	120 hours	99

**—Recommended time interval for use after intercourse for maximal effect.*

Information from reference 46.

TABLE 5
Guidelines for Prevention of Pregnancy and Sexually Transmitted Diseases

Recommendation	*AAFP*	*AAP*	*AMA*
Annual visits	X	X	X
Emphasize patient confidentiality during each clinic visit	X	X	X
Obtain history, including:			
Drug and alcohol use			X
Gynecologic/obstetric history			X
Medications			X
Previous and current contraception use		X	X
Previous STDs		X	X
Sexual history (number of sex partners, sexual orientation, consensual sex, abuse)	X	X	X
Counseling			
Emphasize that abstinence is priority	X	X	X
Pregnancy prevention	X	X	X
Sexuality education	X	X	X
STD prevention	X	X	X
Discuss contraception	X	X	X
Condoms	X	X	X
Other methods	X	X	X
Emergency postcoital contraception		X	
Emphasize adolescent male responsibility in preventing pregnancy and STDs		X	
Encourage parental involvement	X	X	X
Support and participate in ongoing research		X	
Support condom-use campaigns		X	
Support community outreach programs	X	X	

AAFP = American Academy of Family Physicians; AAP = American Academy of Pediatrics; AMA = American Medical Association; STDs = sexually transmitted diseases.

Information from references 31 through 33, and 37.

ity and use of emergency contraception.[33] Counseling should emphasize that emergency contraception is intended only for emergency use, is not as effective in preventing pregnancy as regularly used hormonal methods, and does not protect against the transmission of STDs. However, emergency contraception is safe and effective, and does not act as an abortifacient.[46] Advance supply of emergency contraception is associated with increased knowledge and use, without adversely affecting the use of routine contraception.[47] Various emergency contraception options are summarized in *Table 4*.[46]

COUNSELING MALE ADOLESCENTS

Teenage boys typically experience first intercourse at a younger age and have more sex partners than teenage girls, yet they seek care for reproductive concerns less frequently.[48,49] Most adolescent health clinics and education programs target the health of girls, with fewer interventions aimed at boys. A 1993 survey of publicly funded family planning clinics indicated that only 6 percent of patients were male.[50] Adolescent boys desire information about STDs, contraception, pregnancy, and sexual health, but as few as 32 percent of sexually active boys receive this information from their health care providers.[50] Decreasing the incidence of teenage pregnancy will require focused attention on male adolescents, including establishing avenues for routine sexual health services and targeted educational programs.

Results from the National Survey of Adolescent Males in 1995 indicated that nearly

Strength of Recommendations

Key clinical recommendation	Label	References
Physicians should link prevention of pregnancy and prevention of sexually transmitted diseases when counseling sexually active teenagers.	C	32, 45
Condom use should be encouraged in all sexually active teenagers, regardless of whether another contraceptive method is used.	C	37
Periodic counseling about effective contraceptive methods is recommended for all women at risk for unintended pregnancy.	C	32, 45

67 percent of teenage boys used condoms during their most recent act of intercourse. Overall, however, only 69 percent of teenage males used condoms consistently.[49] Knowledge about condoms and contraceptives does not appear to encourage initial or consistent use.[51] For an adolescent boy, the primary motivating factors for condom use include not only pregnancy and STD prevention, but also partner desires, his perception of his ability to use condoms ("condom use self-efficacy"), and peer perceptions about condoms.[52]

Guidelines

Several medical organizations endorse efforts to prevent teenage pregnancy and STDs. These guidelines are summarized in *Table 5* and serve as a model for family physicians' roles in teenage pregnancy and STD prevention.[31-33,37]

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