Investing in

Clinical Preventive Health Services for Adolescents

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Middle Childhood and Adolescence
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Policy Information and Analysis Center for Middle Childhood and Adolescence

The Policy Information and Analysis Center for Middle Childhood and Adolescence (Policy Center) is funded through a Cooperative Agreement with the Maternal and Child Health Bureau (MCHB). Established in 1996, it is located within the School of Medicine at the University of California, San Francisco, where it is operated jointly by the Division of Adolescent Medicine and the Division of General Pediatrics (both within the Department of Pediatrics) and the Institute for Health Policy Studies. The overall goal of the Policy Center is to assist MCHB in identifying, developing and analyzing information to assist practitioners and policymakers at the national, state and local levels to enhance the health status of the middle childhood and adolescent populations. Its efforts focus on four major areas affecting the health status of children and adolescents: the content of primary and preventive care services; the organization, staffing and financing of clinical services; quality of care; and the development of an early warning system to monitor emerging health problems.

National Adolescent Health Information Center

The National Adolescent Health Information Center (NAHIC) of the University of California, San Francisco (UCSF) is funded through a Cooperative Agreement with the Maternal and Child Health Bureau. Established in October, 1993, it is located within the UCSF School of Medicine where it is operated jointly by the Division of Adolescent Medicine, Department of Pediatrics and the Institute for Health Policy Studies. NAHIC's goal is to improve the health of adolescents by serving as a national resource for adolescent health information and research to assure the integration, synthesis, coordination and dissemination of adolescent health-related information. Major activities include: 1) promoting collaborative relationships with the Maternal and Child Health Bureau, other federal and state agencies, professional and research organizations, private foundations and advocacy groups; 2) collecting, analyzing and disseminating information through short-term and long-term analyses of new policies affecting the adolescent population; and 3) providing technical assistance, consultation and continuing education to states, communities, and providers in content areas that emphasize the needs of adolescents. Throughout its activities, NAHIC emphasizes the needs of special populations including those with special health care needs, those who have relatively poor health outcomes, and those more adversely affected by changes in the health care system and other trends affecting health.

UCSF

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Investing in Clinical Preventive Health Services for Adolescents

Although most adolescents are relatively healthy by traditional medical standards, they face a number of significant threats to their health, many of which are preventable. The most serious, costly, widespread adolescent health problems are attributable primarily to health-damaging behaviors. These behaviors affect not only adolescent health, but also contribute to the leading causes of adult morbidity and mortality.

Early interventions to identify at-risk adolescents would improve the health of today's adolescents and tomorrow's adults. Such interventions include services to prevent these behaviors before they begin; change these behaviors among adolescents who engage in them; or reduce their impact. Thus, adolescence presents a unique opportunity to invest in the health of the entire population. During the past two decades, however, the U.S. has made less progress in achieving its morbidity and mortality reduction goals for adolescents and young adults than it has for virtually every other age group.

As policymakers and health providers are challenged to improve the health of all Americans, they have increasingly turned to preventive efforts that address both biomedical concerns and their social, behavioral and environmental antecedents. These efforts span a wide range of approaches including clinical preventive services (the focus of this monograph) and school- and community-based prevention programs. The ascendance of managed care, with its focus on wellness and population-based health, has the potential to complement this shift toward prevention in the clinical setting. And, while many of the early prevention efforts established by managed care organizations focused on infants and older adults, a "second wave" of preventive interventions explicitly targets children and adolescents as well. Outside the clinical setting, prevention programs—including health education, skills training in areas such as conflict resolution and decision-making, and public information campaigns to prevent adolescents from engaging in risky behaviors—are indispensable complements to clinical preventive services, establishing and/or reinforcing the messages that health care providers deliver during clinical visits.

This monograph begins by presenting a rationale for providing clinical preventive services to adolescents; defining clinical preventive services; and reviewing evidence about the efficacy of these services. Turning to implementation issues, we explore the extent to which these services are being delivered, barriers to service delivery, and promising strategies to reduce these barriers. The monograph then addresses financial issues, reviewing current research on the costs of adolescent health problems and clinical preventive services. Finally, we consider current trends that can potentially improve the delivery of clinical preventive services. The monograph concludes that, despite the need for further research on cost and efficacy, existing evidence makes a compelling case for investing resources to increase the delivery of clinical preventive services to America's adolescents.

WHY PROVIDE CLINICAL PREVENTIVE SERVICES?

The most serious, costly and widespread adolescent health problems—unintended pregnancy, sexually-transmitted infections, violence, suicide, unintended injuries, and the use of alcohol, tobacco and other drugs—are potentially preventable. Indeed, nearly three quarters of adolescent mortality is due to preventable causes. Moreover, the behaviors that contribute most to the leading causes of mortality and morbidity in adults are often initiated during adolescence.[1] About 25-30% of adolescents are considered to be at risk of adverse health outcomes based on the reported prevalence of health-damaging behaviors such as unsafe sexual activity, violence, drinking and driving, and substance use.[2] Co-occurrence of these behaviors is common—with more than a quarter of students in 7th-12th grade engaging in two or more risk-taking behaviors.[3,4] Because of the rapid physical, cognitive and emotional developments that take place during this age period, adolescence is also a time when many health and mental health problems may first emerge.

Although adolescents see physicians less frequently than other age groups,[5] nearly three quarters (73%) of American adolescents see a physician at least once per year.[6] These visits offer physicians and other clinicians the opportunity to provide preventive services. Providers can administer immunizations and prescribe preventive interventions to ensure that certain conditions do not develop. By providing a comfortable, confidential environment and asking relevant questions, clinicians can also identify adolescents who are at risk for, or engage in, health-compromising behaviors.[7,8] This type of

clinical encounter allows clinicians to educate adolescents about the risks of such behaviors and potentially modify the behaviors and their related outcomes.

Studies show that adolescents and their parents want clinicians to address risk-taking behaviors and prevention,[9,10,11] and that adolescents see physicians as credible sources of health information.[12] In a survey of high school students, 80-90% of adolescent respondents indicated that they would find it helpful to talk with a physician about sexual matters and 75% stated that they would trust a physician to keep their questions confidential.[13] Most clinicians also acknowledge the importance of incorporating preventive care into their practices.[14] Together, these factors create a unique opportunity for open discussions of sensitive topics such as reproductive and mental health behaviors, symptoms and needs.

WHAT ARE CLINICAL PREVENTIVE SERVICES?

Clinical preventive services are services that are delivered by a physician or other health care provider in a clinical setting such as a medical office or health center. They are designed to avert or delay the onset of various health and mental health problems, or to identify these problems early in order to reduce their impact more effectively. Although clinical preventive services can be medical in nature (e.g., immunizations for infectious diseases, screening for testicular cancer), many of the most important preventive services for adolescents focus on the behaviors and psychosocial issues that most affect their health and well-being.

The most common clinical preventive services for adolescents include immunizations for infectious diseases such as diptheria, hepatitis A & B, measles, mumps, polio, rubella, tetanus and varicella; screening for a wide range of health and mental health conditions such as depression, vision problems, scoliosis, anemia, and tuberculosis; and education and counseling (also known as health promotion or "anticipatory health guidance") regarding nutrition and diet, exercise, injury prevention, tobacco, alcohol, drugs, dental health, school, family, peers, and sexual behavior.

Preventive services can be broad-based—provided to an entire population, patient or enrollee group—or targeted. Potential criteria for targeted preventive services include age, gender, demographic characteristics (e.g., family income, education, race, ethnicity), family medical history, environmental factors (e.g., neighborhood, geographic region), and behavioral risk factors (e.g., substance use, sexual activity). Often a "bundle" of preventive services is provided during a single wellness visit or checkup.

Recommendations for Providing Clinical Preventive Services to Adolescents

Clinical Guidelines

During the past decade, several national organizations have developed practice guidelines to support the provision and expansion of clinical preventive services to adolescents. These guidelines define the recommended periodicity and content of comprehensive preventive health visits for adolescents. Major sources of practice guidelines include the American Academy of Pediatrics, American Association of Family Physicians, American Medical Association, Maternal and Child Health Bureau, U.S. Preventive Services Task Force, and U.S. Public Health Service.[14,15,16,17,18] The Society for Adolescent Medicine also recommends that health insurance benefit packages for adolescents include periodic preventive health screening consistent with the recommendations in these professional guidelines.[19]

For a comprehensive review and comparison of clinical preventive services guidelines, please refer to Clinical Preventive Services Guidelines for Middle Childhood and Adolescence: An Analysis and Synthesis of Major Recommendations, available from the website of the Policy Information and Analysis Center for Middle Childhood and Adolescence, University of California, San Francisco (http://youth.ucsf.edu/policycenter).

These guidelines recommend that clinicians address a broad range of medical, psychosocial, developmental and environmental issues in their encounters with adolescents. Most recommend annual preventive visits throughout adolescence, de-emphasize screening for uncommon biomedical problems, and encourage education and counseling for health-damaging behaviors. They extend the concept of routine well-child care throughout adolescence and support the delivery of immunizations as recommended by the Centers for Disease Control and Prevention's Advisory Committee on Immunization Practices.

Periodicity of Visits

All the major practice guidelines recommend preventive health visits every 1 to 2 years for healthy adolescents and more often for adolescents who exhibit various behavioral and/or medical risk factors. The importance of annual preventive visits for adolescents is underscored by dramatic increases in the incidence of health-risk behaviors from year to year during this developmental transition. Rates of alcohol, tobacco and other drug use increase significantly from early to late adolescence and the number of adolescents who are sexually active increases significantly every year from 9th to 12th grade.[1,15] Furthermore, the percentage of students engaging in two or more risk behaviors increases from 19% among 7th and 8th graders to 36% among 11th and 12th graders.[4] Because of these large yearly changes,

primary prevention efforts require yearly contacts if they are to take place before risk behaviors begin. In addition, annual preventive visits foster early screening, counseling, and intervention. They offer clinicians the opportunity to reinforce health promotion messages for both adolescents and their parents, to identify adolescents who are at-risk for health problems or have initiated health-risk behaviors, and to develop relationships with adolescents that will foster the open and accurate disclosure of future health information. They also provide the opportunity to monitor growth and development, support psychological and emotional well-being, and encourage healthy lifestyles. Finally, by facilitating adolescents' development of on-going relationships with their clinicians and enhancing adolescents' own knowledge and skills, the visits can help adolescents build competence in effectively and appropriately utilizing the health care system. Through this process, adolescents will potentially be empowered to take greater responsibility for their own health and well-being.[20]

Content of Visits

Although major practice guidelines vary in their specific recommendations, they converge in a number of areas. For example, preventive services recommended for adolescents by all of the major guidelines include screening for depression, eating disorders, hypertension, sexual behavior, sexually-transmitted infections (STIs), suicide risk, tuberculosis, and substance use; counseling for diet, exercise, injury prevention, sexual behavior, substance use and violence prevention; and immunizations for measles, mumps, rubella, tetanus, diptheria, and Hepatitis B (for sexually active youth).[14-18] Each of the recommendations also specifies topics for discussion and guidance to be undertaken with adolescent patients and their parents in order to promote healthy development and lifestyles.

THE EFFICACY OF CLINICAL PREVENTIVE SERVICES

Preventive services provided by physicians can have a significant impact on behavior and behavioral change:

- Clinical preventive counseling services have been shown to be successful with adults in a wide variety of areas, including smoking cessation, problem drinking, nutrition and diet, and injury prevention.[18]
- Accident prevention counseling by pediatricians has been shown to decrease the likelihood of unintentional injury to children. More extensive interventions, including home nursing visits, can influence outcomes such as unintentional injuries, eating patterns, and behavior problems for young children.[18]

Preventive services have also been shown to be successful with adolescents in reducing specific risk behaviors:

- Adolescents in a school with a school-linked clinic and on-campus counselors and health education classes had a lower pregnancy rate than students in a comparison school.[21]
- Adolescent females improved their adherence to contraceptive regimens after receiving comprehensive, developmentally appropriate reproductive health counseling.[22]
- College freshmen who completed a comprehensive risk appraisal questionnaire followed by individualized feedback were less likely to use tobacco than comparison students.[23]

However, few studies specifically address the effectiveness of comprehensive clinical preventive services that screen for multiple risk behaviors. One such study found that initiation rates of cigarette smoking and alcohol use were substantially lower among adolescents who received counseling on these topics compared to those who did not; on the other hand, significant differences between the two groups were not reported for weight loss, increased exercise, improved dental hygiene, diet, or contraceptive use.[24]

Clearly, more research providing definitive evidence of the efficacy and effectiveness of specific and overall preventive interventions for adolescents is needed.[16,19,25] Unfortunately, the evaluation of preventive health services is fraught with methodological challenges. Measuring the effects of clinical preventive services requires large sample sizes; well-defined, relevant outcomes; suitable surveillance systems and data collection mechanisms; and long-term follow-up that grant funding and research cycles may not support.[2] For all these reasons, little clinical research has focused on preventive interventions and their outcomes.

IMPLEMENTING CLINICAL PREVENTIVE SERVICES

How Well are Clinical Preventive Services Currently Delivered to Adolescents?

The potential of preventive services to improve adolescent health will only be realized to the extent that they are adopted and utilized by clinicians, health plans, and policymakers. Despite evidence suggesting the importance and potential efficacy of clinical preventive services for adolescents, delivery of these services lags well behind national recommendations. Even when adolescents do see clinicians for regular preventive ("well care") visits, many studies suggest that the content of these visits rarely meets professional standards:

- Of 60 million adolescent visits to private physicians' offices in 1990, only 15% were health supervision visits; fewer than 5% of visits included preventive health screening procedures such as vision testing; and less than 2% of visits included health promotion counseling on HIV

transmission, or advice on cholesterol reduction.[26] Two thirds of visits included no counseling services of any kind.

- One study examined the extent to which comprehensive, age-appropriate adolescent health screening was undertaken in various clinical settings. In no practice setting was screening provided at the level recommended by professional guidelines. On average, private pediatric and family practice settings screened for only one fifth of age-appropriate health risks; the community family practice setting screened for one third of these risks; the school-based teen clinic screened for just over half of the risks; and the community teen clinic screened for two thirds of age-appropriate health risks. Clinicians at the non teen-focused practice settings rarely screened for socio-behavioral health risks.[27]
- A survey of 366 California pediatricians practicing in a large group-model HMO revealed that, while most screened their adolescent patients for immunization status, blood pressure, and school performance, less than half screened for drinking and driving, depression, eating disorders, suicide, access to handguns, or substance use, and fewer than 20% screened for sexual orientation, sexual and physical abuse, or other injury-related behaviors.[28] Furthermore, the survey found that pediatricians often failed to provide preventive services to adolescents who screened positive for risky behaviors.
- A recent study revealed that primary care pediatricians nationally are not screening or educating adolescents about alcohol to the extent recommended by national guidelines.[29] Of 1,842 physicians surveyed, 49% screened younger (ages 11-14) adolescents and 73% screened older (ages 15-17) adolescents for personal alcohol use. Only 21-32% of physicians asked whether their adolescent patients had ever ridden in a motor vehicle with a driver who had been drinking. With regard to patient education, physicians reported that, on average, 44% of their younger and 62% of their older adolescent patients were educated about alcohol risks; however, a majority of physicians (62%) never utilized the skills-based interventions that have been shown to be most effective in modifying risky behaviors.
- Most state Medicaid programs have not delivered the comprehensive range of early detection and prevention services included in the federally mandated Early and Periodic Screening, Diagnosis and Treatment (EPSDT) guidelines. Although the required package of services includes physical and mental health assessment, screening, and supportive services, there have been widespread problems with states' implementation of EPSDT. Few states have established periodicity schedules that meet adolescents' needs and, among those states that have, few adhere to existing schedules.[30] In addition, states have failed to deliver these services at the rates required by the federal government. In contrast to a federal goal of 80% participation in EPSDT for adolescents, the national participation rate for 15-20 year-olds in 1996 was only 51%.[31] Only 18% of Medicaid beneficiaries in this age group received dental screening, 11% received vision screens, and 6% had their hearing screened.

These and other studies that examine clinician screening for specific risk behaviors (e.g., sexual health, violence)[13, 32, 33, 34] or comprehensive screening for multiple risk behaviors[3 5] confirm that clinicians' provision of preventive services falls well below recommended levels.

Barriers to the Delivery of Clinical Preventive Services

As the studies cited above suggest, developing guidelines with the expectation that clinicians will read them and change their practice has had little clinical impact.[36, 37, 38] A number of factors have impeded the widespread implementation of guidelines for preventive services. These include beliefs and skills of individual providers as well as broader issues related to the health care system and financing in the U.S. These factors, reviewed below, are often reinforced by barriers to health care in general for adolescents. These barriers have been well-described elsewhere and include: inconvenient hours and location, cultural and linguistic barriers, fears about confidentiality, and lack of experience navigating a complex and often fragmented health care system.[39, 40]

Provider Beliefs and Skills

A number of surveys have examined provider-related barriers impeding the delivery of clinical preventive services. Some health care providers are simply unaware of or unfamiliar with new or revised guidelines.[36] In addition, physicians and other clinicians often need training to develop the skills required to provide preventive services confidently and effectively to the general population and to adolescents in particular.[26, 41, 42] Many primary care providers are ill-prepared or reluctant to address the social and behavioral etiologies that underlie the major causes of adolescent morbidity and mortality:

- Prevention skills are not widely taught in U.S. medical schools, with only 25% of accredited medical schools including a course on preventive medicine in their curricula.[41]
- Pediatric providers' feelings of self-efficacy regarding screening adolescents for risky behavior are significantly related to their screening practices during adolescent preventive visits.[43] And yet, physicians serving adolescents report a lack of confidence in their ability to provide what they consider important services to adolescents. In a national survey of pediatricians, only 20% to 30% of respondents believed that they were likely to be effective in modifying a variety of patient risk factors for prevention of adult heart disease.[44] In another survey of pediatricians and family practitioners, 30% of respondents indicated that they did not know how to counsel families about firearms.[45]

- Few clinicians specialize in adolescent health, and most are inadequately trained to address health problems whose symptoms may be primarily psychosocial instead of physical. Furthermore, many clinicians are uncomfortable addressing sensitive issues,[19,42] and reluctant to raise questions where they cannot provide referrals.[46]
- Some clinicians believe that preventive health counseling in general is ineffective, while others believe that adolescents in particular will not change their behavior in response to counseling.[19] Whereas disease-oriented, acute care treatment often provides visible, short-term results that are satisfying to clinicians, patients and families, preventive services in general provide far less immediate feedback and reinforcement.[19] Clinicians are much more likely to learn about prevention failures such a sexually-transmitted infection or an unplanned pregnancy than about prevention successes, such as adolescents making health decisions based on health counseling provided during clinical encounters. It is therefore hard for clinicians providing preventive care to adolescents to know that their efforts make a difference.[2]

Health Care System

In addition to the beliefs and attitudes of individual providers, the context in which clinicians work influences the extent to which they follow clinical guidelines, including guidelines for preventive services. Many aspects of the health care system are not conducive to the provision of clinical preventive services to the general population and to adolescents in particular:

- Both clinicians and their adolescent patients are accustomed to acute, problem-focused treatment. The implementation of preventive services requires a shift to a health promotion/disease prevention paradigm that recognizes the influence of social behavior on medical problems.[15,19] Health care systems often lack the resources, including referral sources, educational materials, and additional support staff, needed to accomplish this shift.[26] Physicians have also cited lack of these resources as barriers to following clinical guidelines in general.[36]
- Providing consistent delivery of preventive care requires organizational commitment, time, and a critical analysis of the delivery of care. The resources to achieve this fundamental change may not be available to all clinical sites.[14]
- Clinicians frequently cite lack of time as an important barrier to the provision of preventive services.[26] Providing these services may take 30-45 minutes for low-risk adolescents and longer if multiple problems are identified.[19] Few clinical settings allow providers to spend this much time with individual patients.[26] Non-medical preventive services, such as health education, often receive low priority in busy health care systems where urgent needs take precedence in appointment scheduling and triage activities.[26]
- Providing effective and comprehensive preventive care requires that the programs and agencies that serve adolescents coordinate their activities in a regular and systematic fashion. Unfortunately, the fragmentation that characterizes the U.S. health care delivery system creates additional barriers for adolescents and other populations that are not experienced with accessing health care services, navigating their way through complex sets of eligibility requirements, or advocating for their own needs.[47]

Health Care Insurance and Financing

Approximately 14% of American adolescents ages 10-17 are not covered by any public or private health insurance program;[6] 30% of older adolescents and young adults ages 18-24 are uninsured.[48] Studies consistently show that these adolescents receive fewer health services than their insured peers in general; for preventive services, this disparity appears to be even greater.[6] Even adolescents with health insurance, however, may face financial barriers to receiving the clinical preventive services they need:

- Clinicians frequently cite reimbursement issues as a barrier to providing preventive services.[19,49] Health insurance may not cover preventive services for adolescents,[30] or it may cover fewer than one well care visit per year.[47] In addition, the use of restrictive medical necessity criteria may limit the extent to which services in a benefits package are actually covered.[30] On the other hand, research indicates that reimbursement alone is not sufficient to ensure the delivery of preventive services. Even when preventive services are fully reimbursed, providers do not always implement these services, indicating the importance of clinician attitudes discussed earlier.[50]
- Furthermore, primary care clinicians operating under a capitation system receive one fixed monthly payment per patient, regardless of the volume or type of services they or other clinicians provide to those individuals. Similarly, clinicians may be reimbursed a fixed amount for a well-care visit, regardless of the length of the visit.[51] Thus, unless clinicians perceive an immediate economic benefit from the provision of preventive services, they will face a financial disincentive for rendering this care, especially if those services might identify health problems needing costly referrals.[30]
- Physician reimbursement rates for adolescent well-care visits may be the same, or less, than for younger children, despite substantially greater morbidity among adolescents.[19] For patients, if co-payments are required, even very small amounts may discourage adolescents and their families from initiating preventive care.[47]

For many clinicians, then, the current balance of factors favors not providing comprehensive preventive services to adolescents. The Society for Adolescent Medicine (SAM) suggests a number of strategies for shifting this balance,

including: enhanced educational efforts targeted toward health professionals and the general public; the endorsement of practice guidelines; training In adolescent preventive services for primary care clinicians and other health care providers; adequate financing and reimbursement for clinical preventive care; additional research into the health outcomes and cost-effectiveness of adolescent preventive services; and the further design and testing of innovative approaches to improve the delivery of prevention to adolescents.[19]

Strategies to Improve the Delivery of Clinical Preventive Services

Several strategies have been shown to improve the delivery of clinical preventive services to the general population. Examples include manual and computerized prompting systems, screening questionnaires and the development of specific health promotion roles for all office staff.[19] In addition, SAM recommends that routine health guidance be provided with a variety of alternative methods and media—e.g., peer education, group health education, printed materials, audio-visual materials, and/or computer-based, interactive multimedia. These approaches should be actively developed and systematically evaluated with the aim of further improving the cost-benefit ratio of adolescent preventive services.[19] Recent studies suggest that provider-focused initiatives can increase the delivery of clinical preventive services to adolescents:

- The University of California San Francisco (UCSF) Division of Adolescent Medicine is collaborating with a major staff-model HMO to implement and evaluate an adolescent preventive services intervention that aims to increase the delivery of preventive services in five areas—helmet and seatbelt use, sexual behavior, tobacco, and alcohol. The intervention includes provider training as well as a customized adolescent screening questionnaire, a provider charting tool, and preventive services support staff (a health educator). The evaluation showed substantial increases in adolescent screening and counseling rates by pediatric primary care providers.[20]
- Some health plans have developed their own training sessions, questionnaires and charting forms to help facilitate the implementation of clinical preventive services guidelines. At five community and migrant health centers, a program to increase implementation of GAPS—including training of health center staff and providing patient questionnaires, resource materials, and clinician manuals—resulted in increased screening and health counseling.[52]
- One HMO has developed an interactive risk assessment tool that helps to screen adolescents for a variety of risky behaviors and health problems. Adolescents sit at a personal computer, answering a variety of questions about their lifestyles and health; this information is used to create a personal health profile. A counselor or health educator reviews this profile in conjunction with the adolescent to identify areas of risk, suggestions for reducing this risk, and areas that need to be handled clinically. A clinician provides follow-up screening, counseling, and treatment based on the results of the profile, allowing the clinician to target areas of concern and allocate time with patients more efficiently. During pilot testing, many adolescents stated that they were more comfortable answering personal questions by computer than they would be with their doctor. The study also suggested that adolescents offer more accurate information to the computer, allowing providers to meet adolescents' needs more effectively.[53]
- The American Medical Association (AMA) is working with 9 middle school-based health centers (SBHCs) in 4 states to determine whether training SBHC staff in GAPS improves clinicians' delivery of clinical preventive services. As part of this project, the AMA has developed a new GAPS Early Adolescent Questionnaire and other data-gathering forms specifically for SBHCs serving 10-14 year-olds. The AMA has also developed resources to provide health guidance to the parents/ guardians of 10-14 year-olds and to help primary care providers share important information about adolescence with parents.[54]

These studies offer promising evidence that it is possible to increase the delivery of clinical preventive services.

COMPARING COSTS

The Costs of Adolescent Health Problems

It has been estimated that the U.S. spends at least $33.5 billion per year on preventable adolescent morbidities.[24] This includes only the direct medical costs (e.g., hospital and physician care, drugs, and appliances) associated with 6 health areas (adolescent pregnancy, sexually-transmitted infections (STIs), alcohol and other drug problems, motor vehicle injuries, other unintentional injuries, and outpatient mental health visits), and therefore underestimates substantially the total impact of preventable adolescent morbidity.

A more recent study by Hedberg and colleagues placed the costs of preventable adolescent morbidities much higher: over $700 billion per year.[7] This study reached its calculations by taking into account the long-term health impact on adults of risk behaviors initiated during adolescence as well as many more indirect costs. These costs include the value of lost productivity and workdays due to illness, disability and premature death; legal costs associated with crime and risky behaviors; the costs of treating pelvic inflammatory disease and infertility; and societal costs associated with adolescent pregnancy and childbirth.

Even the latter estimate, however, is admittedly conservative. It includes only the annual costs the U.S. incurs as a result of tobacco use, obesity, alcohol and drug use, injuries, and unprotected sexual activity. These analyses do not include

the costs of treating many other preventable conditions such as measles or tuberculosis; nor do they account for the costs of failing to diagnose health problems such as dental caries, asthma, depression or diabetes until they develop into much larger, more costly problems. With the exception of immunizations and STI screening, few studies to date have addressed these costs.

The Costs of Providing Clinical Preventive Services

A few studies have attempted to calculate the costs of providing comprehensive clinical preventive services to adolescents. One estimate is that it would cost $130 per person per year, on average, to provide the clinical preventive services recommended by the American Medical Association to all Americans ages 11 to 21 in a fee-for-service system in 1993 dollars. This figure ranges between $78 and $304, depending on the age of the patient.[24] A second study, from 1995, suggests that these costs would range from $50 per year for low-risk adolescents to $150 for high-risk adolescents.[2] And in 1998, the American Academy of Pediatrics (AAP) estimated that the comprehensive range of clinical preventive services it recommends for all adolescents 10-24 years old could be provided for only $78 per person per year ($203.40 if preventive dental services are included).[55] Since payers already incur some of the screening costs included in calculating these figures, the net additional cost of providing preventive services is somewhat lower. Finally, new innovations hold promise for reducing the cost of assessing adolescents' risk-taking behavior. A recent study that examined the use of computer-assisted preventive visits with health counselors found that high-quality screening for risk behavior and counseling visits can be provided for as little as $15.[53] In short, comprehensive clinical preventive services can be provided without incurring significant additional costs.

The Cost-Effectiveness of Providing Preventive Services

Studies to establish the cost-effectiveness of providing clinical preventive services to adolescents have been limited. As noted earlier, any effort to quantify the efficacy of clinical preventive services—which is needed for cost-effectiveness calculations—faces substantial methodological barriers. Some research has been focused on the costs and benefits of hypertension screening for various adult populations, the age at which women should receive regular mammograms, or the value of providing influenza vaccinations to the elderly and immunocompromised. Although some work has been done in the area of immunizations, research related to health guidance and counseling has rarely included measures related to costs or cost-benefit ratios.

Although definitive studies documenting the cost-effectiveness of clinical preventive services for adolescents are not currently available, many health professionals believe that improving the provision of such services could, over time, represent substantial long-term savings in direct medical costs and indirect social costs such as human suffering.[16,19] Conservative projections of clinical cost and resource savings support the notion that even limited success in risk identification, behavioral change, and morbidity reduction will have significant effects in adolescent health and costs. There is evidence to suggest that investing in prevention and early detection for adolescents may yield significant cost savings:

- In a study that modeled adverse outcomes to adolescents based on their participation in risky behaviors, an office-based program to reduce high-risk behaviors saved money when it was effective in preventing risky behavior in more than 5.6% of adolescents; if it was just 5.6% effective, it would be "cost-neutral."[2] According to the authors, this efficacy rate is similar to that demonstrated by other counseling services. Although the study targeted adolescents more likely to engage in alcohol abuse and unsafe sexual activity, the analysis was constructed to understate many of the benefits associated with prevention and the indirect costs it averts (e.g., for treating pelvic inflammatory disease).
- Another estimate of cost-effectiveness, based on different assumptions, can be derived by considering the costs described in the previous section. Based on the AAP estimates, it would have cost $4.3 billion to provide comprehensive clinical preventive services to all 10-24 year-olds in 1998.[55,56] Therefore, if the delivery of comprehensive clinical preventive services (as defined by the AAP) prevented 1% of the $700 billion in costs (i.e., $7 billion) calculated by Hedberg and colleagues,[7] it would "save" more than $2.7 billion, after subtracting the amount required to provide these services to all adolescents.
- A cost-benefit analysis conducted in school-based health centers documented savings of $1.38 to $2.00 for every dollar spent based on estimated reductions in the use of emergency rooms, lower pregnancies, early prenatal care, and early identification of chlamydia.[57]
- A cost-effectiveness analysis conducted in family planning clinics suggests that age-based screening for chlamydia can prevent costly episodes of pelvic inflammatory disease and result in significant cost savings.[58]

The balance in favor of providing clinical preventive services to adolescents can be further enhanced through novel approaches to providing preventive care such as computer-assisted screening and peer-based counseling.

EFFORTS TO IMPROVE PREVENTIVE SERVICES: OPPORTUNITIES AND CHALLENGES

A number of initiatives and trends hold promise for improving the delivery of clinical preventive services to adolescents and enhancing our understanding of which specific strategies are most effective.

Health Insurance Expansions

In 1997, the U.S. Congress passed the State Children's Health Insurance Program (SCHIP), which provides enhanced federal funding to states to expand Medicaid coverage and/or create new health insurance programs for low-income children and adolescents. Through SCHIP, the federal government matches state expenditures on clinical preventive services, although it does not require that states include these services in their SCHIP programs. States, clinicians and health plans are also prohibited from charging co-payments for preventive services such as well visits and immunizations for families with incomes less than 150 percent of federal poverty guidelines. A 1999 study of 12 states' SCHIP programs found that, for either periodicity or content of care, six states require health plans to use adolescent preventive services guidelines and five states are encouraging their use.[47] It is the role of states to ensure that health plans and clinicians actually provide the preventive services that enrolled adolescents need and to monitor the provision of these services through focused contracts and proactive quality assurance activities.

Adolescent-Focused Sources of Care

Several innovative methods for organizing and delivering clinical preventive services for adolescents have emerged over the past decades, among them:

- *Teen Clinics.* Some hospitals, counties and managed care plans operate special teen clinics for their adolescent clients. Services provided in these settings are comprehensive, interdisciplinary, confidential, age-appropriate and adolescent-friendly. One study indicates that teen clinics screen patients more extensively for behavioral, psychosocial, substance abuse and sexual behavior risks than community family practice, private family practice or private pediatric settings.[27]
- *School-Based/School-Linked Health Centers (SBHCs/SLHCs).* Located on or near a middle, junior high or high school campus, these programs provide a wide range of preventive medical, mental health and health education services to children and adolescents in a convenient, accessible setting. There are about 800 school-based or school-linked health centers in the U.S.—just under 2% of all middle and high schools—that serve middle and/or high school students. These health centers are sponsored by schools, hospitals, community health centers, universities, county health departments, and mental health and other agencies.[59,60] Evidence from Colorado suggests that adolescents who have access to school-based health centers use more outpatient primary care and mental health services, but require fewer urgent care and emergency room visits,[61] thus confirming the notion that SBHCs help to prevent costly episodes of care.
- *Safety Net Providers.* In addition to teen clinics and school-based/school-linked health centers, numerous other organizations—including federally qualified health centers, local health departments, family planning clinics, and State Title V/Maternal and Child Health agencies—all have experience and expertise providing primary and preventive care services to adolescents.[30]
- *Non-physician Providers.* Increased use of health professionals other than physicians, such as nurse practitioners, social workers and health educators, and the increasing use of paraprofessionals, may help to expand the system's capacity to deliver the full range of prevention strategies to larger numbers of adolescents. The Society for Adolescent Medicine suggests that peer-based strategies (e.g., peer counseling, health education and risk assessment), although largely untested, hold promise as well.[19]

Current innovative approaches to clinical prevention for youth raise the questions of how best to provide health counseling and prevention messages. As these innovations continue to develop and spread, it will be important to establish the right balance between one-on-one professional guidance by clinicians and supplemental strategies, such as peer education and computerized screening tools.

Healthy People 2000/2010

Since 1979, the U.S. Office of Disease Prevention and Health Promotion has sponsored a national initiative known as *Healthy People*, the goal of which is to improve the health of all Americans. *Healthy People 2000*, released in 1990, was structured around national health promotion and disease prevention objectives targeted for improvement by the year 2000. Adolescents and young adults are one of four age groups targeted by *Healthy People 2000*, and now *Healthy People 2010*. More than 90 objectives for the year 2010 focus on this age group, with 21 "critical" health objectives being used to mobilize the energy of policymakers and public health professionals at the federal, state and local levels. They include areas such as: physical activity and fitness, injury/violence prevention, family planning, immunization and infectious diseases, mental health and mental disorders, sexually-transmitted infections, and substance abuse.[1]

Managed Care and Preventive Services

For an increasing number of adolescents, insurance coverage is provided through managed care rather than traditional insurance arrangements. Thus far, the evidence is inconclusive as to whether managed care organizations (MCOs) support

the delivery of clinical preventive services to either the general population or adolescents in particular. On one hand, managed care has traditionally embraced principles of prevention, wellness, population-based medicine, quality assurance, and health promotion.[51] On the other hand, some studies show that managed care does not increase access to preventive services.[30, 62, 63]

Managed care can potentially play a powerful role in prevention efforts for adolescents. MCOs will use health promotion and disease prevention programs to improve health status and quality of care if they believe that such programs will also contain health care costs. Managed care also offers the potential for improved case management and greater continuity of care. Managed care plans can initiate system-wide education and prevention efforts that reach a large number of adolescents. Plans that offer innovative preventive services to adolescents may also benefit through increased member satisfaction and loyalty as parents with a choice of health plans select those that offer broader coverage for their adolescent children. Examples of preventive adolescent health initiatives include:

- *Kaiser/Group Health in Seattle* includes evidence-based guidelines on its internal computer system which are geared toward helping physicians conduct preventive visits with adolescents. This plan also features a multidisciplinary adolescent consultation team that identifies adolescents at risk for drug abuse, sexually-transmitted infections, and various health-damaging behaviors. The health plan projects that the team saved $50,000 in unnecessary visits and emergency room use in just 6 months.[51,64]
- *Tufts Health Plan in Massachusetts* has sponsored a Teen Council to help design adolescent-friendly programs. Council activities have included targeted mailings to physicians and members encouraging them to take advantage of annual checkups for adolescents, and the development of guidelines to encourage effective dialogue between providers and adolescents for a number of important health behaviors.[64]
- *United HealthCare of Florida* has sponsored an interactive educational program on topics such as heart health and breast cancer. In one session it sponsored with a local medical center, health educators showed adolescent girls how to do breast self-examinations.[64]
- Both *PacifiCare of Colorado* and *Kaiser Permanente in Denver* have collaborated with Denver public schools to improve members' access to school-based health centers (SBHCs). Kaiser employs staff who work at several SBHCs, while PacifiCare reimburses SBHCs for care provided to its members.[64]

Quality and Performance Measures

The current movement toward increased accountability contributes to the improved delivery of clinical preventive services for adolescents through the measurement of various quality and performance indicators. Current developments in this area may encourage managed care plans to invest in clinical preventive services for adolescents. For example, the National Committee for Quality Assurance (NCQA) includes a strong focus on prevention in its accreditation process and the most recent version of the Health Plan Employer Data and Information Set (HEDIS). HEDIS—a set of quality indicators used to rank the performance of clinicians and health plans—tracks preventive measures for adolescents such as well-care visits and various health screenings. These indicators are included in health plan "report cards" that purchasers and consumers use to compare plans. HEDIS 3.0, released in 1996, includes 4 specific measures of adolescent clinical preventive services: a preventive services visit within the past 12 months, adolescent immunization status, physician counseling regarding substance use, and chlamydia screening for young women ages 15 to 25 years.[65] Many plans are currently reporting information on these measures, while others are voluntarily collecting these and other prevention data. Many states are using or adapting HEDIS for their SCHIP Programs.[66]

Similar developments include the Consumer Assessment of Health Plans and a collaboration between NCQA, Agency for Healthcare Research and Quality and Foundation for Accountability to develop a Child and Adolescent Health Measurement Initiative (CAHMI). The CAHMI is developing a standardized tool for measuring the quality of care provided to children and adolescents. The tool includes an adolescent-specific survey targeted to 14-18 year-olds and is therefore an important potential tool to monitor and evaluate health care programs. The CAHMI is working closely with NCQA to maximize the potential for the inclusion of appropriate measures in HEDIS.[47] Finally, since 1999, the Maternal and Child Health Bureau has required that all state and territory Title V/Maternal and Child Health agencies report on 18 national performance measures, 6 national outcomes measures, and 7-10 state-negotiated performance measures, as well as state activities to address these areas. Although the national measures cover a wide range of maternal and child health issues, many states and territories are focusing at least some of their measures and activities on clinical preventive services for adolescents.[47]

Medicaid Managed Care

Most state Medicaid agencies now contract with managed care organizations to provide health care to child and adolescent Medicaid recipients. Although all require that managed care plans cover the full range of services specified by the EPSDT program, most face considerable challenges in integrating these services into managed care.[62] A second challenge for states is quality assurance for Medicaid

managed care. Most states have established incentives and/or penalties for providers and/or health plans to achieve certain levels of compliance with service standards—often based on HEDIS measures. According to one study, about two thirds of states with managed care contracts in 1995 monitored the periodicity of well-child visits provided to adolescents ages 12-21, primarily following HEDIS specifications for adolescents.[67]

The Potential Power of Purchasers

In many cities and states, employers who provide health insurance for their workers and workers' families have channeled their collective purchasing power into larger purchasing coalitions. These organizations have been successful in negotiating discounts and quality improvements from managed care plans. Such coalitions—not to mention large public purchasers such as state Medicaid agencies—could also be instrumental in shaping the content of benefit packages. For example, purchasers could require that all plans they contract with cover a full range of clinical preventive services for adolescents; ensure that provider payments are adequate to cover these services; and monitor the delivery of preventive services using focused quality assurance and reporting systems. The Center for Health Policy Research at George Washington University has created several guides for state managed care purchasers (primarily Medicaid and SCHIP agencies) to use in contracting with managed care plans.[68]

Managed care organizations that want to assess and improve their performance with adolescents should refer to *Assuring the Health of Adolescents in Managed Care: A Quality Checklist for Planning and Evaluating Components of Adolescent Health Care*. The tool can be used to review current practices and to develop procedures designed to better meet the needs of adolescents in a number of areas, including access (e.g., confidentiality, choice of providers), adolescent-appropriate quality services (e.g., use of practice guidelines), and coordination of services (e.g., outreach, case management). The checklist is available from the website of the National Adolescent Health Information Center (http://youth.ucsf.edu/nahic).

CONCLUSION

Preventable health conditions have a profound effect on the lives of adolescents, their families, and the communities in which they live. The unique opportunities brought about by managed care, the movement toward greater accountability and quality improvement, the power of purchasers, new and expanded health insurance programs, national efforts such as Healthy People, and widespread recognition of the importance of prevention argue for the timeliness of efforts to truly invest in prevention for America's adolescents. The fact that these services have the potential to accomplish so much—for both the health of adolescents and, in the long-term, of adults—with a relatively modest financial outlay further enhances their value.

Although clinical preventive services represent a promising strategy, improving adolescent health requires a broader prevention approach that reflects the complex array of influences on adolescent health—influences such as schools, the media, government regulations, and the characteristics of the families, neighborhoods, and cultures in which adolescents live and learn. While important, clinical preventive services alone will have minimal impact on adolescent health and prevention in the absence of efforts from other sectors of the adolescent's environment.[69,70] The involvement of multiple groups is critical to assuring the success of prevention efforts, particularly as the number of adolescents continues to grow and become more racially and ethnically diverse. Studies have shown that coordinated community-wide efforts focused on a broad spectrum of risk and prevention are most likely to be successful.[71] Indeed, the services described in this monograph will be most effective when they are reinforced by activities and programs that build skills and attitudes supportive of health promotion among adolescents, as well as adults.[72] This requires the commitment of youths, families, schools, communities, businesses, media and faith-based organizations, as well as health care professionals. Clinicians can play a significant role in helping to coordinate community efforts, advocating for the inclusion of adolescents in the planning process and for systems that are "adolescent-friendly."[73]

In addition to being comprehensive, prevention efforts require sustained commitment to be successful in the long-term. In recent years, the U.S. has made some progress in reducing adolescent morbidity and mortality, and in lowering the rates at which young people engage in risky and health-compromising behaviors. Research suggests, however, that we cannot take these improvements in adolescent health for granted. In 1992, after a downward trend in illicit drug use, the proportion of adolescents who reported that they perceived drugs to be very risky, as well as those who said that they disapproved of drug use, began to decline. After 1992, the use of illicit drugs rose sharply among high school students.[74] Lessons learned from other health trends suggest that prevention efforts at multiple levels—including providers, schools and the public health community—must continue or even increase in order to sustain current gains. [75]

Although clinical preventive services represent a promising component of a broad-based prevention approach, advocates for adolescents must be realistic about how much health care decision-makers are willing to invest in preventive care. It may take years before the health and financial benefits of prevention are realized. For managed care organizations

(MCOs), which may experience annual turnover in membership, the initial fiscal burden of implementing comprehensive preventive services for adolescents may appear to outweigh the long-term benefits. Some health care purchasers and MCOs are therefore hesitant to make this investment in adolescent preventive care. As noted earlier, a substantial portion of these long-term benefits will be realized by avoiding costly health problems among adults. Thus, the short-term cost of clinical preventive services is incurred primarily by purchasers, employers and insurers, while the long-term benefit may be accrued by other insurers, adolescents, families, and society as a whole.

Advocates must also be realistic about what the public is willing to support and what the health care system is capable of achieving. Adolescents in the 21st century will represent a smaller percentage of the overall population than they do currently, placing them in competition for limited resources. As the drive to contain health expenditures continues, it will be important to continue to focus attention on the real needs of adolescents. If standard indicators of adolescent morbidity and mortality show signs of improvement, for example, will resources be shifted to other critical areas and populations? Although those in the field typically advocate for comprehensive preventive health services, it may be more realistic and useful to instead promote services that are closely tailored to the needs of individual adolescents, their communities, and the settings in which they are seen. For example, practice guidelines may recommend that all adolescent girls be screened for eating disorders, but in communities where physical violence poses a greater threat to young women's health, clinicians may want to focus their efforts on personal safety and/or injury prevention. In short, some flexibility on the part of clinicians and the groups that formulate preventive services guidelines will be required.

On the other hand, there are some indications that the public might proactively decide that it is willing to invest in comprehensive clinical preventive health services for youth. At least one study suggests that Americans, far from wanting to pursue spending reductions at all costs, would be willing to pay more in health insurance premiums, alcohol/tobacco taxes, and/or other subsidies, to fund more prevention and community-based health efforts.[76] It will be important for policymakers and advocates in the 21st century to present these critical tradeoffs in ways that value young people, their role in society, and what they need in order to be healthy, productive and integral members of society.[75]

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