

Prevention Opportunities in Health Care Settings

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ABSTRACT

Psychologists have an opportunity to offer their expertise at a time when health care settings are beginning to recognize the importance of behaviorally based interventions for improving health and health care. The authors review the changing patterns of health and illness that have led to an increased interest in the role of patient and provider behavior and discuss the many advantages of using health care settings as prevention sites. Examples of successful behaviorally based prevention programs are presented, along with the evidence supporting the cost-effectiveness of such programs. Challenges presented by working in health care settings are described. Throughout, the authors emphasize the multiple opportunities for psychologists' involvement across a wide variety of health care delivery sites.

Prevention is central to much of health care, and most health care providers embrace its importance. Historically, preventive services have been offered under the auspices of medical personnel such as physicians and nurses. Until recently, psychology has played a minimal role in the development, delivery, or evaluation of preventive services. This stands in stark contrast to the leadership role psychology has played in efforts to prevent mental disorders ([Mrazek & Haggerty, 1994](#); [Price, Cowen, Lorion, & Ramos-McKay, 1988](#)).

But this is changing. As the critical role of behavior to the health and well-being of the U.S. population has become more and more apparent, psychology has begun to define itself as more than a mental health profession. In February 1996, the Council of Representatives of the American Psychological Association (APA) passed a resolution recognizing psychologists as health service providers. Psychologists have begun to define

their purview as health care rather than mental health care. More psychologists are practicing in health care settings, serving in roles ranging from clinician to program developer and evaluator. There has been enormous growth in Health Psychology (Division 38), and clinical health psychology is now an APA-recognized specialty within professional psychology.

—Prevention activities conducted in health care settings can take many different forms and can occur in many different contexts; all offer important opportunities for psychologists. Interventions can take place in hospitals, outpatient clinics, school-based clinics, or patients' homes. Prevention activities that involve direct services to the child or adolescent are often delivered by medical personnel, other health professionals, or trained laypersons; these adults who deliver services to children can be the recipients of interventions designed to change their behavior as well. For example, preventive interventions such as immunizations are often preceded by behavioral interventions designed to increase physicians' provision of these services. Other programs target patient or parent behavior in an effort to prevent illness or injury or to help a patient or parent manage the psychological sequelae of various prevention-related medical procedures (e.g., genetic testing). Still others focus on changing the structure of health care organizations so that they can more readily deliver preventive services. The outcomes that these interventions are designed to influence also vary widely and can include changes in coping skills and decision making as well as behavior.

—In this article, we briefly review the changing patterns of health and illness that have led to an increased interest in the behavioral aspects of health and health care. We then discuss some of the advantages of using health care settings as prevention sites. Several examples of successful prevention programs are presented, along with evidence supporting the cost-effectiveness of prevention programs. Finally, the special challenges presented by working in health care settings are discussed. Throughout, we emphasize the multiple opportunities for psychologists' involvement across a wide variety of health care delivery sites.

The Increasing Importance of Behavior

—During the 20th century, life expectancy increased from 47 years in 1900 to 77 years in 2000 ([U.S. Department of Health and Human Services, 2000](#)). Prevention played a major role in this success story. Sanitation assured clean drinking water. The development of immunizations prevented disease. Childhood infectious diseases such as diphtheria, poliomyelitis, pertussis, and congenital rubella syndrome used to occur in regular epidemic waves; with available vaccines, they are now rare or nonexistent in the United States. Preventive services for the early detection of disease further prolonged life. For example, early detection of cancer permitted treatments to be initiated before the disease had spread. Screening for metabolic disorders such as phenylketonuria permitted parents to prevent mental retardation in their affected child. In addition to increasing life expectancy, preventive services and the development of effective antibiotic agents also changed the nature of the primary causes of U.S. mortality. At the beginning of the 20th century the leading causes of death were pneumonia, tuberculosis, and gastrointestinal

disease. Today, the primary threats are chronic diseases and injuries from accidents or violence ([U.S. Department of Health and Human Services, 2000](#)).

—In children and adolescents, the major causes of morbidity and mortality are not diseases but are related to potentially preventable behaviors ([U.S. Department of Health and Human Services, 2000](#)). This conclusion has been subsequently reinforced by two reports of the U.S. Department of Health and Human Services—Healthy People 2000 and Healthy People 2010—outlining the health objectives for the nation. For example, unintentional injuries are the leading causes of death in children and adolescents in the United States. For every injury-related death, there are 34 injury-related hospitalizations and 1,000 emergency room visits ([Centers for Disease Control and Prevention, 2001](#)). More than one half of injury-related deaths in young people are associated with motor vehicle accidents. Other causes of injury-related deaths in children are drownings, fires, poisonings, and falls. In adolescents, more than one half of all fatal car accidents are alcohol related. Homicide and suicide are the second and third leading causes of death among young people ages 15 through 24.

—The importance of individuals' behavior is further highlighted when one considers U.S. mortality statistics across the life span. Whereas unintentional injuries are the leading causes of death in U.S. children, U.S. adults die of chronic diseases such as heart disease, cancer, stroke, pulmonary disease, diabetes, HIV, and chronic liver disease ([U.S. Department of Health and Human Services, 2000](#)). But nearly half of these deaths are related to behavioral risk factors, including tobacco use, poor diet, insufficient exercise, alcohol and other substance abuse, motor vehicle accidents, use of firearms, and risky sexual behavior ([McGinnis & Foege, 1993](#)). Further, most of these behaviors—smoking, dietary practices, physical activity patterns, sexual behavior, alcohol, and other drug use—begin in childhood or adolescence ([U.S. Department of Health and Human Services, 2000](#)). Consequently, prevention activities targeting children and adolescents have the greatest potential to affect the health of the nation both in the short term, by reducing the primary causes of death in youth, and in the long term, by reducing the primary causes of death in adults.

—For children, parental behavior is often critical to the success of prevention efforts. Parents are central to the establishment of children's eating and exercise habits. Parents are responsible for having the child immunized, supervising the child, and assuring the child lives and plays in a safe environment and is appropriately restrained when traveling in a motor vehicle. Parents' own health behaviors, including smoking, alcohol or other substance abuse, dietary preferences, and exercise habits, all profoundly affect the child. For these reasons, prevention programs targeting children often involve parents.

—The behavior of health providers is important as well. Brief office-based counseling has been shown to have positive effects on both patients' behavior and health outcomes ([Fleming, Barry, Manwell, Johnson, & London, 1997](#)). On the basis of such evidence, health organizations have published professional practice guidelines delineating prevention services that should be offered by practicing clinicians. For example, the American Medical Association ([Elster & Kuznets, 1994](#)) and the Bureau of Maternal and

Child Health ([Green & Palfrey, 2000](#)) have published guidelines for adolescent preventive services that recommend universal screening and counseling in areas such as substance use and sexual behavior. The [American Academy of Pediatrics \(AAP, 1995\)](#) published specific recommendations for preventive pediatric practice at each stage of the child's development from birth to young adulthood. Further, the AAP has published detailed policy statements on a host of prevention-related behavioral issues: immunizations, childhood injury, adolescent sexual behavior, substance abuse, environmental exposures, diet, exercise, and weight. These policies are made readily available through the World Wide Web ([American Academy of Pediatrics, 2002](#)).

Advantages of Using Health Care Settings as Prevention Sites

☰ There are many compelling reasons for using health care systems to deliver prevention services. Prevention programs offered through health care settings provide access to large numbers of children. Over 90% of children ages 1 to 4 years, over 80% of children ages 5 to 14 years, and over 70% of adolescents see a physician at least once in a given year ([U.S. Department of Health and Human Services, 2001](#)). Because these data reflect visits to office-based physicians only, they actually underestimate child and adolescent contact with health care systems. Other health care settings offering health services to young people include emergency rooms, hospital-based ambulatory care facilities, city and county agency clinics, school-based clinics, community health centers, youth detention centers, clinics dealing with specific areas such as family planning or oral health, and outreach programs that offer services in the child's home. The range of settings in which children receive health care also increases access to more specialized populations in need of specific preventive services, such as teens seen in clinics for a sexually transmitted disease (STD) who are at high risk for pregnancy and STDs including HIV/AIDS.

☰ The protected and private nature of the clinical encounter can offer prevention opportunities that may not be viable in more public settings. Medical settings maximize confidentiality, and young people who are assured of confidential interactions are more willing to disclose sensitive information related to sexuality, substance use, and mental health, which are often the focus of preventive interventions ([Ford, Millstein, Halpern-Felsher, & Irwin, 1997](#)). The one-on-one interactions that are possible in these settings also offer opportunities for individually tailored preventive interventions. Because health issues are likely to become more salient within the context of a health care visit, these visits may offer important “teachable” moments. [Petty and Cacioppo \(1996\)](#) argued that persuasive communications are processed more thoroughly when the individual is personally involved in the issue. For example, an adolescent boy may be more receptive to an STD intervention if he thinks he may have an STD. A young woman may be more interested in smoking cessation after she learns she is pregnant. A teen may be primed to listen to ideas about injury prevention when being treated in the emergency room after an avoidable accident. The range of settings in which health care is delivered in a confidential manner also facilitates the delivery of highly salient and focused interventions to targeted populations. For example, health services provided in juvenile detention facilities provide a unique opportunity to deliver violence prevention programs

to a targeted population in great need of such prevention efforts ([Wilson-Brewer, Cohen, O'Donnell, & Goodwin, 1991](#)).

— Consumers also turn to health care providers when they have health-related questions or concerns of all types. In 1995, at the request of the APA, [Porter Novelli](#) conducted a survey of 12,000 men and women ages 21–65 who were the primary health care decision makers in their households. The family physician was viewed as the single most important source of information, even when the problem was *mental* rather than physical. Adolescents hold similar views; health providers are seen as credible information sources ([Levenson, Morrow, & Morgan, 1986](#)).

— Finally, because health care systems access large numbers of youth and view prevention activities as within their purview, they serve an important gatekeeper role, often determining who will receive what kind of services. Consequently, prevention programs offered in health care settings represent some of the best opportunities to impact the health of the nation.

Prevention in Health Care Settings: Exemplars and Opportunities

— The empirical literature documenting psychology's contributions to preventive services in health care settings is quite limited, particularly in the area of child and adolescent health. Most prevention programs for children and adolescents have taken place outside of health care settings, such as in schools. Although studies demonstrating the effectiveness of these programs are available (see other articles in this special issue), they do not speak directly to the efficacy of using the health care system. Most studies on office-based counseling within health settings have focused on adults and thus do not inform us about the utility of interventions designed for younger populations. Few studies speak directly to the development, delivery, or evaluation of preventive health services designed to improve the health of children and adolescents. As such, it is not possible to offer a lengthy review of successful, behaviorally based preventive interventions based in health settings, nor is it possible to describe the “critical ingredients” of these programs. What we can do, however, is to highlight some of the more psychologically based prevention programs as exemplars of the kind of programs that psychologists could offer in the health care context.

— Clinical preventive services are often delivered by medical personnel, and office-based, brief counseling conducted by physicians or their staff is an effective strategy for influencing patient behaviors in diverse areas such as injury prevention ([Bass et al., 1993](#)) and alcohol use ([Bien & Miller, 1993](#)). Published guidelines articulate the content and periodicity of recommended screening and counseling practices (e.g., [U.S. Preventive Services Task Force, 1996](#)), and physicians are generally positive about the value of prevention (e.g., [Schneider, 1994](#); [Sobal, Valente, Muncie, Levine, & Deforge, 1985](#)). Yet numerous studies document providers' failure to follow established guidelines (e.g., [Blum, Beuhring, Wunderlich, & Resnick, 1996](#); [Halpern-Felsher et al., 2000](#); [Igra & Millstein, 1993](#); [Klein et al., 2001](#); [Millstein, Igra & Gans, 1996](#); [Millstein & Marcell, 2003](#)).

☞ Most of the efforts to understand and change physician behavior have been atheoretical. Psychologists, as experts in behavior change, adherence, and communication, could play a central role in guiding provider behavior to enhance the likelihood of prevention program success. For example, [Lustig et al. \(2001\)](#) and [Ozer et al. \(2001\)](#) successfully used skills-based training to improve screening and counseling practices among primary care physicians and nurse practitioners. Psychologists led the intervention sessions in which providers were taught both communication skills relevant to teen at-risk behavior and behavior change strategies. Study outcomes indicated that those providers who received the intervention were more likely to ask their adolescent patients about risky behaviors and were more likely to deliver appropriate health-related messages to the teen about those behaviors.

☞ Successful behaviorally oriented prevention programs aimed at patients or families have been conducted in a variety of health care settings: hospitals (e.g., [Zastowny, Kirschenbaum, & Meng, 1986](#)), outpatient clinics (e.g., [Cohen, Blount, & Panopoulos, 1997](#)), pediatric day hospitals (e.g., [Manne, Bakeman, Jacobsen, Gorfinkle, & Redd, 1994](#)), school-based health clinics (e.g., [Zabin, Hirsch, Smith, Streett, & Hardy, 1986](#)), dental clinics (e.g., [Hovell et al., 1996](#)), family planning clinics (e.g., [Orr, Langefeld, Katz, & Caine, 1996](#)), prenatal clinics (e.g., [Windsor et al., 1993](#)), and through nurse-home visitation (e.g., [Olds, Henderson, & Kitzman, 1994](#)).

☞ For example, two meta-analyses have documented the effectiveness of preparation programs for children facing hospitalization and surgery; these programs reduced children's anxiety and behavioral distress during the procedure, with benefits persisting up to 30 days postprocedure ([Saile, Burgmeier, & Schmidt, 1988](#); [Vernon & Thompson, 1993](#)). Although the elements of these programs vary, they almost always involve information or education about what the child can expect during the hospitalization or surgery. Many programs also teach children how to cope successfully with these experiences. Often, parents are taught to be “coping coaches” for their children. For example, [Zastowny et al. \(1986\)](#) taught parents stress-reduction techniques and how to serve as coping coaches for their children at stressful points during hospitalization (e.g., blood draw, preoperative medication). Parents were instructed to practice these skills with their child prior to the child's hospital admission. Compared with children who only received information about what would happen to them in the hospital, children whose parents served as coping coaches had significantly less self-reported fear and fewer problematic behaviors preadmission, during hospitalization, and after hospital discharge. Other studies conducted in outpatient clinics or dental settings have shown that similar interventions can be successfully used to prevent or minimize distress in children undergoing a variety of acute but painful medical procedures, including immunizations (e.g., [Cohen et al., 1997](#)), venipunctures (e.g., [Manne et al., 1990, 1994](#)), and dental procedures (e.g., [Melamed, Hawes, Heiby, & Glick, 1975](#)).

☞ Impressive outcome data have been reported by [Olds et al. \(1994\)](#), who relied on nurse-home visitation to provide their prevention services. Those targeted for services were primiparous pregnant women at high risk for negative health and socioeconomic outcomes. Many of the women were adolescents at the time of their pregnancy. Nurse-

home visitation occurred regularly during pregnancy and continued through the second year of the child's life. The nurses helped women improve their health-related behaviors during pregnancy, coached them in infant caregiving once the baby was born, and addressed the mother's personal development (e.g., helping women return to school, find work, and practice family planning). At 25–48 months of age, children born to intervention group mothers lived in homes with fewer hazards for children, had 40% fewer injuries, had 45% fewer behavioral and parental coping problems, and made 35% fewer visits to the emergency department than did children in the comparison group (Olds et al., 1994). Long-term effects have also been found; the program was associated with significant reductions in the number of subsequent pregnancies, the use of welfare, child abuse and neglect, and maternal criminal behavior for up to 15 years after the birth of the first child (Olds et al., 1997). In a randomized controlled trial of the program in primarily African American women, the program was found to reduce pregnancy-induced hypertension, childhood injuries, and subsequent pregnancies (Kitzman et al., 1997). Intervention components that appear to be most important for success include targeting an appropriate at-risk population (e.g., low-income unmarried teens), providing services that are sufficiently intense and comprehensive (e.g., multiple visits over time), and using professionals (e.g., nurses) rather than paraprofessionals (Olds & Kitman, 1993).

—Any discussion of prevention opportunities within health care settings would be incomplete without mention of medical or genetic screening for the expressed purpose of at-risk identification and disease prevention. Although this has been practiced for some time, the complex issues involved have come to the attention of a much larger audience, including the lay public, through the Human Genome Initiative. Jointly funded by the National Institutes of Health and the Department of Energy, the project has mapped the human genome, including its 3 billion base pairs of DNA (Venter et al., 2001). The psychosocial implications of genetic screening are enormous and include accurate communication and understanding of risk status, decision making (e.g., whether to be tested, who should be tested, how to respond to risk confirmation), and the emotional and interpersonal consequences of learning one's own risk status or that of a family member. Some of the best work in this area has been conducted by psychologists (e.g., Baum, Friedman, & Zakowski, 1997; Lerman, Daly, Masny, & Balshem, 1994; Marteau & Richards, 1996). Although this work has primarily focused on adults, a number of psychologists have begun addressing these issues in childhood populations (e.g., Carmichael et al., 2003; Johnson, 2001; Michie, 1996). For example, Johnson and Tereyak (1995) assessed the psychological impact of identifying those at-risk for diabetes, before disease onset. Both children (over 8 years of age) and adults, as well as family members (parents or spouses), were assessed. Clinically significant levels of anxiety were associated with at-risk identification in both children and adults, as well as family members. However, this anxiety appeared to dissipate over time. Although there is no known method to prevent diabetes onset in at-risk individuals, many of the at-risk children and adults reported initiating lifestyle or health behavior change in an effort to delay or prevent disease onset. These data suggest that at-risk notification has emotional, social, and behavioral impact.

—It is clear that additional research is needed to address the complex issues presented by genetic or other methods of identifying people at risk for a disease before actual disease onset. Although psychologists are perhaps the best trained of all the health professionals to address these issues, relatively few psychologists have been involved in either relevant research or service delivery. In contrast, the profession of genetic counseling has rapidly expanded to meet the need. The first class of genetic counselors graduated in 1971; there are now 34 U.S. and Canadian training programs in genetic counseling ([National Society of Genetic Counselors, 2002](#)).

—Some of the most impressive health-related prevention programs have been developed by psychologists *outside* of the health care setting. For example, the increasing prevalence of U.S. children who are overweight is now considered a major public health problem. Approximately 11% of American youth are overweight or obese (defined as above the age- and sex-specific 95th percentile; [U.S. Department of Health and Human Services, 2000](#)). Because obesity in childhood is associated with obesity in adulthood, successful efforts to address children's obesity can prevent the cardiovascular- and diabetes-related problems associated with obesity in adulthood ([Dietz, 1998](#)). Effective programs producing long-term weight loss in obese children have been developed by psychologists; the work of Len Epstein and colleagues serves as an exemplar. Their eight-week family-based behavioral management program was followed by six additional sessions over a six-month period. Not only did the children in this program lose weight, but this weight loss was maintained at a 10-year follow-up ([Epstein, Valoski, Wing, & McCurley, 1990](#)). However, participants were recruited primarily by newspaper ads and fliers rather than physician referral. The program was not an integrated part of the child's health care services but represents what might be accomplished if overweight children were regularly referred by their physicians for specialized, intensive treatment by skilled interventionists.

Are Prevention Services Offered in Health Care Settings Cost-Effective?

—Although many of the preventive services that are provided in health care settings have not been assessed in terms of their cost-effectiveness, there is limited evidence that prevention can be cost-effective, even in the short term (see [Durlak, 1997](#), for a discussion). For example, nationally, every dollar spent on family planning services to high-risk women saves an average of \$4.40 as a result of avoiding shorter term expenditures on medical services, welfare, and nutritional services ([Forrest & Singh, 1990](#)). [Downs and Klein \(1992\)](#) have argued that even at low levels of effectiveness (i.e., 5%), many prevention programs may be cost-effective. For example, [Windsor et al. \(1993\)](#) conducted a smoking cessation program for low-income, pregnant African American women seen in a public health maternity clinic. The program's smoking cessation rate of only 14% produced an estimated benefit–cost ratio ranging from 18:1 (low estimate) to 46:1 (high estimate). These high benefits for a modestly effective intervention program were possible because of the serious long-term impact of maternal smoking during pregnancy on the health of the baby. Preventive interventions targeting adolescents may be particularly cost-effective, because of the enormous costs associated with adolescents' health risk behaviors. In 1989, hospital and physician costs for live

births to adolescent mothers exceeded \$2 billion ([Health Insurance Association of America, 1991](#)). Costs for treating their low birth weight infants, which is often the result of delayed or inadequate prenatal care, are estimated to be approximately \$1.5 billion yearly ([Gans, Alexander, Chu, & Ester, 1995](#)). It is estimated that over \$850 million per year is spent on the costs associated with adolescent STDs other than HIV/AIDS, \$159 million is spent on HIV/AIDS, \$270 million is spent on substance use treatment, and \$10 billion is spent on injuries.¹ If we average these costs across the entire adolescent population, we spend about \$855 for each adolescent yearly. In contrast, the average yearly cost of providing clinical preventive services to adolescents is estimated to be between \$73 and \$120 per adolescent per year ([Gans et al., 1995](#)).

Prevention Programs in Health Care Settings: Barriers and Challenges

—Although our goal is to excite psychologists about the many opportunities there are for both research and effective prevention programming in health care settings, we would be remiss if we did not acknowledge some of the barriers and challenges inherent in this type of work. These barriers and challenges are economic as well as methodological and social-psychological. Despite impressive data attesting to the economic and functional benefits of prevention programs to the society at large, prevention programs have always had difficulty attracting their fair share of the health care dollar. Acute care demands shape the organization of most health care settings, making prevention a second-level priority and the first to be eliminated in times of limited resources. There was great hope that health care reform efforts in the 1990s would bring increased attention to prevention services. After all, in fee-for-service environments there are few incentives for keeping people well; practitioners are paid more for seeing sick patients who need services. In a capitated environment, keeping people well is financially lucrative because fewer services are required ([Lasker & Lee, 1994](#)). However, many capitated settings do not see prevention services as financially viable because the benefits are long term, when those provided the services may no longer be in the capitated system. It remains to be seen whether this will change as managed care systems mature. Certainly, prevention program benefits could be demonstrated more clearly within a universal health care environment. Nevertheless, with limited resources, there will always be tension between the numerous, immediate demands of the ill and the potential to reduce those demands in the future by spending money on prevention now.

—Evaluating the impact of prevention programs that take place in health care settings has been and is likely to continue to be a challenge. Most prevention programs are never evaluated at all. Evaluations are expensive; many prevention programs barely have the resources to operate, much less to conduct a systematic evaluation of their effectiveness. Prevention program staff are usually health service providers with no training in evaluation who may not recognize the value of evaluation, viewing it as a drain on limited resources for services.

—Methodological challenges to prevention program evaluation exist as well. Available samples are typically small within any given health setting, making statistical comparisons difficult. This is especially problematic because the effects of prevention

may be subtle, relatively modest, and difficult to measure. Larger scale evaluation efforts that include multiple sites must cope with the problems associated with site variability and the difficulty of assuring fidelity of implementation in multiple, complex, and often changing systems. And many prevention program outcomes of greatest interest cannot be detected in the short term, presenting a significant obstacle to any attempt to measure prevention program effectiveness. One alternative is to identify short-term program outcomes that can be empirically linked to longer term effects. Yet there is often a lack of conceptual clarity in short-term prevention outcome selection and measurement. For example, many tobacco, alcohol, and drug abuse prevention programs are aimed at young people who have not yet engaged in these behaviors. How should the short-term effectiveness of these programs be evaluated? Is a measure of increased knowledge of the harmful effects of these substances adequate? Suppose the student signs a contract promising not to smoke, drink alcohol, or use illicit drugs during the next six months—is that a success? These outcomes signify some kind of success, but their link to more meaningful, long-term behavioral effects is often unknown.

—Although psychologists are clearly invested in health care, they have not been major players in prevention activities offered through health care settings. Perhaps because psychology has traditionally viewed itself as a *mental* health profession, it has not been at the health care table, despite the central role of behavior to the health of children in the United States and the health of the nation. In contrast, other health care providers—pediatricians, family practitioners, nurses, health educators, and genetic counselors—have readily accepted the challenge. These professionals usually do not have the training in behavior change, measurement, program design, and evaluation that psychologists can offer. As a consequence, they may not always recognize or value those skills and sometimes fail to see the need for psychology as a player in prevention services. Although the opportunities are great and the expertise psychologists can offer is considerable, psychologists also need to understand that they are entering a social–psychological environment already occupied by other professions with their own histories, values, and perspectives. This can present unique challenges to any psychologist who wants to become fully integrated into the health care environment. At the same time, the complex, multidisciplinary nature of health care settings offers stimulating opportunities for psychologists to apply what they know in ways that can meaningfully affect children's health and well-being.

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¹These costs, reported in 1992 dollars, represent short-term costs only. For example, the \$850 million spent on adolescent STDs does not consider the long-term costs associated with these disorders, such as costs associated with infertility, a sequela of STD.

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