



Academy for Educational Development

***Summary of a Review of
the Literature:
Programs to Promote Chlamydia
Screening***

Date: April 12, 2007
Prepared for: Centers for Disease Control and Prevention
Submitted by: Academy for Educational Development

I. INTRODUCTION.....	3
II. RESEARCH QUESTIONS.....	4
III. METHODOLOGY.....	5
IV. FINDINGS.....	6
1. Research Question 1.....	6
1a. Knowledge.....	6
1b. Beliefs.....	7
1c. Attitudes.....	9
2. Research Question 2.....	12
2a. Communication with parents.....	12
2b. Communication with partners and friends.....	13
3. Research Question 3.....	15
3a. Patient psychosocial factors.....	16
3b. Patient demographic factors.....	16
4. Research Question 4.....	18
4a. Provider psychosocial factors.....	18
4b. Provider demographic factors.....	19
4c. Provider systems factors.....	20
5. Research Question 5.....	20
5a. Mass media campaigns.....	21
5b. Nontraditional testing sites.....	21
5c. Community-based interventions.....	23
5d. Systems interventions.....	24
6. Research Question 6.....	24
7. Research Question 7.....	25
V. CONCLUSIONS.....	27
WORKS CITED.....	28

Infertility Prevention Social Marketing Campaign

Summary of a Review of the Literature on Programs To Promote Chlamydia Screening

I. Introduction

Chlamydia is among the leading cause of pelvic inflammatory disease (PID), which can lead to infertility, ectopic pregnancy, and chronic pelvic pain. Chlamydia develops into PID in up to 40 percent of untreated women (Rees, 1980; Stamm et al., 1984), and 12 percent of women are infertile after their first experience with PID (Gerberding, 2004). According to CDC's STD Surveillance Report (2007), 1,030,911 chlamydial infections were reported in 2006. Females aged 15 to 19 years had the highest chlamydia rate, (2,862.7 per 100,000), followed by females aged 20 to 24, (2,797.0 per 100,000).

Healthy People 2010 clearly sets forth objectives to reduce the prevalence of chlamydia in the United States (DHHS, 2000). Objective 25-1 calls for the reduction of chlamydia, specifically among young women and men ages 15 to 24, and objective 25-2 targets the reduction of gonorrhea broadly across the population. To this end, CDC, as well as the United States Preventive Services Task Force (USPSTF) and numerous other professional organizations, currently recommend that all sexually active women ages 25 years and younger be screened for chlamydia. There is currently no screening guideline for men.

According to a report of the American Social Health Association (ASHA), the average age of a female being screened for chlamydia is 28.9 years (ASHA, 2006). Among the target group of sexually active teens and young adults, evidence suggests that screening rates fall far short of the recommendations; for example, the 2005 Health Plan Employer Data and Information Set (HEDIS) found that only between 34 and 52 percent of sexually active individuals ages 16 to 24 years are being screened for chlamydia (National Committee for Quality Assurance, 2006).

To better understand the many and varied factors that contribute to chlamydia screening, the Academy for Educational Development (AED) conducted a review of the literature published in this area. Findings from this review will support the development of the Centers for Disease Control and Prevention's (CDC's) Infertility Prevention Social Marketing Campaign.

II. Research Questions

It is currently assumed that the primary goal of CDC's Infertility Prevention Social Marketing Campaign will be to increase the number of sexually active adolescents and young women, ages 15-25 years, who seek annual chlamydia testing. Because we understand that medical providers do not always follow recommended screening guidelines for chlamydia, particularly if the patient presents for an unrelated health problem, a secondary goal of the intervention will be to improve patient-provider communication to ensure that the recommended screening will take place.

With these assumptions in mind, we developed the following research questions to help guide the literature search and to focus the review:

1. What factors influence sexually active teens and young adults to go to a health care provider for a checkup or for the specific purpose of getting tested for *Chlamydia trachomatis* (CT)?
2. What parent, peer, and partner factors influence adolescents and young adults to seek preventive health care as well as testing and/or treatment for STIs?
3. Once sexually active teens and young adults are in the presence of a health care provider, what factors influence them to raise and/or discuss matters related to their sexual health? What factors influence adolescents and young adults to request STI screening?
4. What psychosocial, demographic, and systemic factors increase the likelihood that health care providers will take a sexual health history and order STD testing according to recommended guidelines?
5. What interventions show promise for increasing adolescents' and young adults' general health-seeking behavior as well as health care seeking for STI testing and treatment?
6. What interventions show promise for promoting the health care provider practices of taking a sexual health history and ordering tests for STIs according to recommended guidelines?
7. What gaps in the research should we seek to address with focus groups or other research?

III. Methodology

For the purposes of this review, we searched both academic literature and gray literature. The search strategies are summarized and outlined below.

Academic literature. The search of academic literature employed standard research procedures and included two databases: PsychInfo and PubMed. These databases were searched using several related terms thought to cast a wide net in identifying research pertinent to the research questions. A sample of these terms follows:

- Chlamydia & (screening, testing)
- Gonorrhea & (screening, testing)
- Adolescent health-seeking behaviors
- Adolescent health communication
- Adolescent peer communication & STD
- Adolescent sex partner communication & STD
- Parent communication & adolescent & STD
- Adolescent provider communication
- Provider screening chlamydia
- Provider screening gonorrhea

Searching with these (and similar) terms yielded more than 10,000 articles. However, we further refined the search, eliminating several thousand hits. This refinement was performed using the following inclusion criteria, either automatically by placing limits on subsequent searches or manually through abstract review:

- Research with North American populations
- Primarily concerned with chlamydia and/or gonorrhea
- Published in English
- Published within the past 5 years (i.e., since January 1, 2002)

Gray literature. In addition to a search of academic literature, we performed a truncated review of the gray literature. The primary aim of the gray literature search was to identify applicable quantitative or qualitative research findings that were not reflected in the published academic literature. This review process was fluid, beginning with a scan of organizations pre-identified by team members with extensive experience in sexual health and related fields, and expanding to other sources of gray literature, which they were identified or referenced in the research. The organizations originally identified (listed below) were validated over the course of the review, as their work was referenced by other sources:

- Advocates for Youth
- Alan Guttmacher Institute
- American Academy of Family Physicians
- American College of Obstetricians and Gynecologists
- American Social Health Association
- Annie E. Casey Foundation
- California Chlamydia Action Coalition
- Ford Foundation
- Kaiser Family Foundation
- Robert Wood Johnson Foundation

Although the search was designed to limit items to material published since 2002, we made exceptions for research cited multiple times or for gray literature that was thought to be

particularly valuable. A total of 94 items from the academic and gray literature were reviewed, of which 78 are included in this report. A summary of all materials identified is appended to this document as Appendix A.

IV. Findings

Findings from this review of the literature are organized according to the research questions stated in Section II above.

1. **What factors influence sexually active teens and young adults to go to a health care provider for a checkup or for the specific purpose of getting tested for CT and GC?**

Key Findings:

- Many teens consider themselves knowledgeable about STDs, but research shows a lack of knowledge about asymptomatic disease, testing options, and the connection between STDs and fertility problems.
- Many young people misperceive their vulnerability to infection, which can affect decisions around sexual behavior.
- Adolescents often misunderstand the symptoms of infection, either attempting to use over-the-counter remedies or thinking symptoms will clear with time.
- Embarrassment about the need for testing is a significant barrier for many young people.
- Concerns about the confidentiality of testing can influence decisions about whether or where to seek screening, although research suggests its main influence is on the latter.
- Fear of the implications of a positive test result keeps many young people from being

The literature explored a variety of intrapersonal factors that influence the screening behavior of teens and young adults, such as knowledge, beliefs, attitudes, and feelings of self-efficacy. Presented below are findings related to each of these areas.

1a. Knowledge

The literature on adolescent and young adult screening makes inroads toward a greater understanding of young people's knowledge related to the topic. This literature includes knowledge about the STDs themselves and screening for these diseases.

Research has explored the role that knowledge plays in facilitating or hindering screening for STDs (Tilson et al., 2004; Blake et al., 2003). Tilson and colleagues (2004) conducted a series of focus groups with young people (ages 14 to 24 years) in North Carolina to explore barriers to STD testing. Groups were conducted with white, African American, and Hispanic youths, and participants were grouped organized according to gender and race/ethnicity. Over the course of the focus groups, it became apparent that knowledge of STDs and, in particular, asymptomatic disease was generally low (with the exception being among African American females, who were quite knowledgeable about the topic). In addition, few focus group participants knew where

to go to receive STD testing in their area. Similarly, Blake and colleagues (2003) found through focus group research with high-risk teens and young adults (ages 15 to 25 years) in Massachusetts that participants generally lacked knowledge about chlamydia, its effects, or screening methods.

These findings are supported by a national survey by the Kaiser Family Foundation, which revealed that 37 percent of surveyed teens (ages 12 to 17 years) either “didn’t know” or “didn’t think” that infertility can be a consequence of STD infection. Moreover, nearly two-fifths of respondents “didn’t think” that an asymptomatic person could spread STD, and 75 percent of them identified a lack of knowledge about where to get tested as a barrier to seeking screening. Despite these significant knowledge deficits, nearly three-quarters of teens had reported that they knew “a lot” or “some” about STDs (Kaiser Family Foundation, 2001).

The Kaiser Family Foundation finding that many teens are unaware of the connection between STDs and fertility is supported by other research. In particular, Trent and colleagues (2006) found that adolescent females do not seem to be aware of the role that they, themselves, could play in preventing future fertility problems. Nearly three-quarters of the 15- to 19-year-old females thought there was a chance they could develop fertility problems in the future, and many girls recognized chlamydia and pelvic inflammatory disease as potential causes of future fertility problems. However, fully 58 percent of girls thought they had little or no control over developing fertility problems.

Promising research suggests that teens are open to learning more about STD testing and, in particular, about their testing options. The Kaiser Family Foundation (2001) asked teens to identify sexual health topics about which they would like more information. More than half (51 percent) wanted to know more about where to be tested for STDs, and 54 percent wanted to know specifically what happens during STD testing.

Participants in both focus group studies described above suggested that increasing general knowledge around STDs and screening for STDs would be a good first step to reaching young people, ultimately with the hope of increasing screening (Blake et al., 2003; Tilson et al., 2004). Although the researchers acknowledge that increasing knowledge alone might not be sufficient to increase screening rates, they find these results promising, especially in light of the topics the participants said would catch their attention; for example, many of the teens and young adults said that increasing knowledge of asymptomatic disease, along with ease of testing (especially urine-based testing) and ease of treatment might spur some young people to get tested.

1b. Beliefs

Health-related beliefs are known to influence health behaviors and therefore are included in several models of health behavior (e.g., Health Belief Model, Theory of Planned Behavior, Theory of Reasoned Action). Because these health beliefs might in part explain people’s behaviors (or at least intentions to adopt a behavior), many researchers have attempted to elucidate young people’s health beliefs concerning STDs and sexuality in general. Exploration in this area is fashioned around a variety of constructs, including perceived seriousness, vulnerability, severity, and self-efficacy—each of which is summarized below.

Perceived seriousness. Research conducted by Marcell and Halpern-Felsher (2005) established that health beliefs play a role in the general health-seeking behavior of adolescents. Study participants, who were all 13- to 19-year-old high school students, read a series of health scenarios and were asked several questions about each scenario, including how likely they were to seek care in each case. Researchers found that the teens were far more likely to seek care in situations that they believed to be more “serious.” In itself, this finding is not surprising; however, results revealed that, of the four scenarios presented to students (flu, smoking, depression, and sex initiation), sex was deemed the least “serious” issue. The authors also found that teen females, in general, were more likely to perceive the sexuality scenario as “serious” than teen males.

Likewise, Barth and colleagues (2002) reported that college students participating in indepth interviews frequently discussed the perceived seriousness of STDs, however not in a manner conducive to testing. Participants said they did not perceive STDs—other than HIV/AIDS—to be a very serious concern. Similarly, results from Crosby and colleagues (2002) suggest that teens perceive AIDS to pose a greater threat to their health than STDs in general. These findings are troubling, given that Chacko and colleagues (2006) found that young women who thought contracting an STD was “very serious” were twice as likely to seek screening after having sex with a new partner, as compared with young women who thought contracting an STD was only “somewhat serious” or “not serious.”

Perceived vulnerability. Evidence suggests that most teens and young adults do not think they are at risk for STD infection, which might affect their testing decisions. For example, in a Kaiser Family Foundation survey (2001), 84 percent of 15- to 17-year-olds explained that their peers do not get tested for STDs because they do not perceive themselves to be at risk. Sexually active teens were even more likely to give this explanation—93 percent of these respondents said that low perceived vulnerability explained why their peers forego testing.

Similarly, Ford and colleagues (2004) found that the vast majority of young people think their risk of chlamydia or gonorrhea infection is very low, even if they engage in high-risk behaviors. The authors analyzed data from the National Longitudinal Study of Adolescent Health, which included a nationally representative sample of sexually experienced 18- to 26-year-olds. Only 14 percent of the sample perceived they were at risk for contracting chlamydia or gonorrhea, with the odds of perceiving risk being significantly elevated among Blacks, Hispanics, unmarried respondents, inconsistent condom users or nonusers, respondents reporting multiple partners, those with a previous diagnosis, and those reporting symptoms (odds ratio 1.5–3.3). Nevertheless, only 33 percent of those teens and young adults who ultimately tested positive for chlamydia and/or gonorrhea had perceived they were at risk for the diseases.

Perceived vulnerability to chlamydial infection is also an issue as young people initiate new sexual relationships. Many teens and young adults think they will “just know” if a potential sex partner is infected with an STD; they may in turn make decisions concerning sexual relationships based on these false perceptions of vulnerability (Andrinopoulos et al., 2006; Barth et al., 2002; Kaiser Family Foundation, 2001). For example, the Kaiser Family Foundation found that a third of teens surveyed said they would “know” if someone they were dating had an STD, and nearly

one in five does not think that teens need to worry about STDs unless they have sex with “a lot” of partners.

Finally, perceived vulnerability also might be linked to the type of risk factor under consideration. For example, Banikarim and colleagues (2003) surveyed 240 mostly African American young women (ages 16 to 22 years) about decisions to be screened for chlamydia and gonorrhea. The authors found that respondents were more amenable to screening if they had recently changed sex partners, as compared with after having unprotected sex with their main partner. This was despite the fact that a vast majority of the young women were aware that it was possible to be asymptomatic for these conditions and, therefore, unprotected sex with any partner could put a person at risk.

Perceived severity. Research suggests that the main reason young people forego testing for chlamydia and gonorrhea is because they are asymptomatic (Farley et al., 2003; Tebb et al., 2004a). A survey of 98 adolescent females (ages 13 to 20 years) in a managed care setting found that only 22 percent would participate in any form of chlamydia or gonorrhea testing in the absence of symptoms (Tebb et al., 2004a). However, even among teens and young adults who are symptomatic, not all will seek treatment; perceived severity might help explain this discrepancy. For example, indepth interviews have been conducted with female teens and young adults who have foregone treatment in the presences of symptoms. Many of these teens and young women explained they did not think the symptoms were severe enough to warrant medical attention; they thought that the symptoms could be treated with over-the-counter medications or that the symptoms would resolve themselves over time (Cunningham et al., 2005; Farley, 2003). This finding also has been observed in focus groups with urban adolescent males (Lindberg et al., 2006).

Interestingly, Cunningham and colleagues (2005) found that increased perceptions of symptom severity might at some point cross a threshold and actually serve as a deterrent to seeking care among some young people. Their qualitative study with urban adolescent females (ages 14 to 19 years) suggests that a certain amount of symptom-related fear or anxiety appears to be a motivator to seeking care, whereas too much or too little perception of severity can have the opposite effect. Specifically, participants told the researchers that mild symptoms might delay care because they might be viewed as self-treatable; likewise, symptoms perceived as extremely severe also can delay care. Female teens might be afraid to seek medical attention because they fear hearing bad news and, in particular, fear hearing they have an untreatable condition.

Nevertheless, most evidence suggests that the presence of symptoms, or even an increased perceived seriousness of contracting an STD, might override other barriers and increase a young person’s likelihood of seeking testing or treatment (Farley et al., 2003; Cunningham et al., 2005; Chacko et al., 2006).

1c. Attitudes

According to some health behavior models, such as the Theory of Reasoned Action, attitudes about a particular behavior can serve as an intermediating factor between an individual’s beliefs about the behavior and his or her intentions to take action. In the case of screening for

chlamydia, attitudes about the testing process are important to a full understanding of the factors that contribute to a young person's decisions about seeking testing.

Embarrassment and shame. Feelings of shame and embarrassment about testing for STDs are commonly reported in the literature as being barriers to care (Barth et al., 2002; Blake et al., 2003; Elliott & Larson, 2004; Lindberg et al., 2006; Tilson et al., 2004). Embarrassment was reported by teens and young adults as resulting from either or both of two stimuli. Some reported feeling embarrassed to talk to the provider about the need for a screening (Blake et al., 2003; Elliott & Larson, 2004; Lindberg et al., 2006; Tilson et al., 2004), whereas for others the embarrassment stemmed from potential peer reactions should their need for a test be discovered (Barth et al., 2002; Lindberg et al., 2006).

One of the few studies focusing primarily on adolescent males found that most of the perceived barriers to testing centered on potential feelings of shame and embarrassment (Lindberg et al., 2006). During focus groups, urban male teens told researchers they feared being "discovered" going to a clinic because it could spawn rumors among their peers. The teens were particularly concerned about female peers finding out they had sought testing because some might assume they "have something," resulting in less social desirability. In addition, participants reported feeling embarrassed to discuss the issue with health providers, in particular, in cases that warranted interactions with multiple personnel.

Confidentiality. Confidentiality has commonly been identified by young people as a concern when thinking about testing (Barth et al., 2002; Blake et al., 2003; Elliott & Larson, 2004; Ford, 2001; Kaiser Family Foundation, 2001; Reid et al., 2005). As pointed out in some studies (Barth et al., 2002; Reid et al., 2005), these concerns might have a larger impact on where, as opposed to whether, to seek testing. For example, college students said they would feel more comfortable seeking STD testing from a community clinic rather than from their college health center or their family doctor in their home town because they perceived more anonymity at a community clinic and there was less risk of the community clinic notifying a parent about the visit (Barth et al., 2002). Likewise, in an examination of the records of 9,723 female teens and young adults, Reid and colleagues (2005) found the likelihood of STD testing was reduced when care was concentrated with a usual provider; many young people who were tested received the screening from someone other than their regular provider.

Similarly, in a survey of 302 African American adolescents ages 12 to 17 years, Lane and colleagues (1999) found that concerns about confidentiality were not the chief factor in deciding to seek medical attention for a suspected STD, although these concerns might influence where a teen seeks care. Moreover, the authors found that whereas 60 percent of the respondents thought it was important for providers to keep information confidential from parents, 88 percent thought it should be kept confidential from peers. This concern about confidentiality might be reflected in the fact that more than half of the teens (57 percent) said they would prefer to go to a clinic outside their neighborhood for STD services, whereas only 22 percent said they would seek STD services at a school-based clinic.

Nevertheless, fear of parental notification has been noted as a factor by several researchers. Among 12- to 17-year-olds interviewed by the Kaiser Family Foundation (2001), the most

commonly cited barrier to STD testing was that “their parents will find out they are having sex”; more than three-quarters of respondents thought this concern was a major barrier to testing among their peers, while an additional 14 percent thought it was a minor barrier. Likewise, Ford (2001) found that 92 percent of the 342 surveyed adolescents would agree to be tested for STDs if they knew their parents would not find out, with boys in this study being less likely to be deterred by parental notification than girls. Teens and young adults interviewed by Blake and colleagues (2003) said they would feel more comfortable receiving testing in an anonymous form, such as through a home-based test, primarily because family physicians might not keep the visit confidential from parents. Elliott and Larson (2004), although not specifically discussing STD testing, found that teens from smaller communities think twice about seeking medical care because the office staff might include neighbors or friends of the family.

Testing procedures. Several qualitative studies have noted that an aversion to the testing procedures themselves can be a barrier to seeking screening among teens and young adults (Armstrong, 2003; Blake et al., 2003; Tilson et al., 2004; Elliott & Larson, 2004). This finding appears to be especially prevalent among males, who hold negative views of urethral swab collection (Armstrong, 2003; Blake et al., 2003; Tilson et al., 2004). Although some female adolescents have expressed an aversion to STD screening through pelvic examinations (Blake et al., 2003; Serlin et al., 2002), it was not reported as a major barrier in most research. Elliott and Larson (2004) did not ask about specific testing methods but found that teens might be anxious when they are not sure what the exact procedure will be.

Other fears. Other fears described in the literature as posing a barrier to timely screening include the following:

- *Fear of positive test results.* Fear of STD testing was reported in a variety of ways. Some adolescents reported a general fear of hearing that they are infected with an STD (Armstrong, 2003; Blake et al., 2003). Other young people reported a specific fear that testing might reveal they have HIV/AIDS (Blake et al., 2003; Cunningham et al., 2005). Finally, some adolescents reported that fear of testing can manifest itself as denial—that they would rather not know their STD status than risk hearing they are infected (Barth et al., 2002; Kaiser Family Foundation, 2001).
- *Fear of damage to relationships.* Teens and young adults interviewed by Blake and colleagues (2003) said fear of test results was due in part to fear of possible negative effects on relationships. Adolescent males said that testing could lead to questions about infidelity, a fear that was echoed among adolescent females interviewed by Cunningham and colleagues (2005).

2. What parent, peer, and partner factors influence adolescents and young adults to seek preventive health care as well as testing and/or treatment for STIs?

Key Findings:

- Mothers remain the primary source of general health information for many adolescents, especially younger adolescents. Peers become an important source of health information as teens grow older.
- Research shows that mothers are often aware of, and supportive of, visits for reproductive health services.
- Many young people communicate with their partners about seeking sexual health services, although communication about STDs also is reported as a source of anxiety for many teens.
- Teens are open to learning more about communicating with their partners about

2a. Communication with parents

Young people often turn to their parents for general health information. Specifically, mothers have been shown to be the primary sources of general health information among adolescents, particularly among younger adolescents (Ackard & Neumark-Sztainer, 2001). A survey involving a nationally representative sample of 3,153 students in grades 5 to 12 found that, overall, 42 percent of males and 58 percent of females identified their mother as the person they would turn to first for general health information. However, this finding might not hold true as children get older; in this study, older students were less likely to cite their mothers as primary sources of health information and more likely to cite their friends instead.

When it comes to conversations about topics related to sex, teens might not readily consult their parents. Half of all teens and 54 percent of sexually active teens surveyed by the Kaiser Family Foundation report never having spoken with a parent about STDs (Kaiser Family Foundation, 2002a). Teens gave several reasons for not communicating with parents about STDs, including that they worry about their parents' reaction (83 percent); worry their parents will think they are having sex (80 percent); are embarrassed (78 percent); or they do not know how to bring up the subject (77 percent). These findings seem to be echoed in survey results showing that 45 percent of teens want to know more about how to talk with their parents about STDs (Kaiser Family Foundation, 2001).

Evidence suggests that parents have similar fears regarding communicating with their teen children about STDs. In a qualitative study, Eastman and colleagues (2005) found that many parents of adolescents expressed fears about what and how much to say about sex. Parents also expressed concerns about how to start a conversation about sex with their children. Many parents commented that their own parents had not discussed sex with them, so they lacked examples of what to say, and doubted their abilities to speak effectively about the topic. Many parents also believed that their adolescents did not want to communicate with them about sexual health topics.

Despite these findings, studies suggest that many mothers are aware of their teen daughters' clinic visits for reproductive health services. In one study of 399 female teens (13 to 19 years old) attending a reproductive health clinic, 45 percent reported that their mothers knew they were at the clinic and, of these respondents, 96 percent said their mothers were supportive of the visit (Harper et al., 2004). The authors did, however, note patterns according to race/ethnicity: while 56 percent of black teens reported their mothers were aware of the visit, the same was true for 48 percent of Hispanics, 44 percent of whites, and only 12 percent of Asians.

In a larger study of adolescents visiting family planning clinics, 60 percent of the females under 18 years old said their mothers were aware of their clinic visit (Jones et al., 2005). The authors noted a pattern similar to Harper and colleagues (2004) with respect to race/ethnicity, however the differences were not statistically significant. Data analysis revealed that teens who reported higher levels of communication with parents about sexuality issues were more likely to indicate that a parent knew about the visit. A third of the teens said they had discussed STDs with their parents “a great deal,” while 36 percent had discussed the issue with parents “somewhat” or “a little,” and 30 percent had never discussed STDs with their parents. Eighty-five percent of female teens with high levels of parent communication about STDs reported parental knowledge of the visit, compared with 34 percent of those reporting low levels of communication (Jones et al., 2005).

In a related field of exploration, several studies have examined the influence of perceived “parental monitoring” on teens' risk behaviors and, ultimately, STD diagnosis. Perceived parental monitoring has been assessed by asking adolescents the extent to which their parents know where they are and whom they are with when they are away from home or school. Survey research with 5,930 high school students in Los Angeles revealed that parental monitoring was the strongest correlate of decreased sexual risk—it was associated with lower rates of sexual initiation and fewer sexual partners among students who were already sexually active (Ethier et al., 2006).

In one study with 1,130 African American females (ages 14 to 18 years) from low-income areas, lower perceptions of parental monitoring was associated not only with a variety of sexual risk behaviors, but also with laboratory-confirmed STD diagnosis (DiClemente et al., 2001). Specifically, the authors found teens who reported less perceived parental monitoring were more likely to also report they did not use a condom during last intercourse, or that they did not use any form of contraception during their last 5 occasions of intercourse. In addition, these teens were more likely to report having multiple sex partners, or having sex partners who were believed to be non-monogamous. Importantly, adolescent females reporting less perceived parental monitoring were 1.7 times more likely to have a laboratory-confirmed sexually transmitted disease. Similarly, in a study with 476 male and female adolescents (ages 14–18 years) in detention facilities, researchers also found laboratory-confirmed STD diagnosis to be inversely associated with perceptions of parental monitoring (Crosby et al., 2006).

2b. Communication with partners and friends

The Kaiser Family Foundation reports that many teens are not communicating with their boyfriends or girlfriends about sexual health issues, including STDs. A telephone survey of more than 500 15- to 17-year-olds (Kaiser Family Foundation, 2002a) revealed that 41 percent of

sexually active teens (and 58 percent of all teens) have never talked to their partners about STDs. The teens gave a number of reasons for this communication deficiency, including the following:

- They are worried about what their partner might think (82 percent).
- They do not know how to bring it up with their partner (73 percent).
- They are embarrassed (71 percent).
- They do not know enough about the topic (62 percent).

The level of commitment in a relationship can make it easier for teens to bring up sexual health topics (Kaiser Family Foundation, 2002b). Nearly three-quarters of the surveyed teens agreed that talking about STDs and birth control is harder when the sexual relationship is casual; likewise, 84 percent agreed that the longer a relationship lasts, the more likely someone is to talk about STD testing. These findings are suggestive of other studies that have shown that young people in more intimate—or at least committed—relationships are less likely to use condoms, presumably because of higher levels of trust. Trust levels might in turn stem from communication about STDs and/or knowledge of a partner’s STD status, although the relationship is complicated and not clearly established (Aalsma et al, 2006; Fortenberry et al., 2002). In light of these findings regarding STD-related communication, it is promising that nearly half of teens (47 percent) reported wanting to know more specifically about how to talk to their partners about STDs (Kaiser Family Foundation, 2001).

Also promising is that many teens who present for sexual health services report significant levels of communication with partners before their visit. In a survey of 400 female teens attending a reproductive health clinic, more than three-quarters (77 percent) reported that a male partner was aware of their visit, with 92 percent of those saying their male partner was supportive of the visit (Harper et al., 2004). Raine and colleagues (2003) found that 37 percent of males ages 14 to 24 making their first visit to a sexual health clinic had been referred by their sexual partners. Likewise, the Young Men’s Clinic in New York City found that, after clinic personnel told young women to encourage their male partners to come in for screening, the percentage of males who reported being referred by a partner doubled—from 25 percent to more than 50 percent (Armstrong, 2003).

Surveys of young people seeking sexual health services also show significant levels of communication with friends before the visit. In one study (Harper et al., 2004), most teen girls (72 percent) said that a friend was aware of their visit to a reproductive health clinic, second to male partner awareness (77 percent) and well above maternal awareness (45 percent). Similarly, in a survey of 110 males ages 14 to 24 making their first visit to a sexual health clinic, 29 percent said they had been referred by a friend (Raine et al., 2003).

3. Once sexually active teens and young adults are in the presence of a health care provider, what factors influence them to raise and/or discuss matters related to their sexual health? What factors influence adolescents and young adults to request STI screening?

Key Findings:

- Many adolescents want to discuss sexual health issues with their providers but are too embarrassed or afraid to start the conversation.
- Young women, older adolescents, and those with more risk factors appear more likely to discuss sexual health issues with their providers.
- A significant number of teens have never spoken with their health care providers about sexual health issues.
- Some teens might not request a screening because they falsely believe it is a routine part

The previous sections have examined client factors associated with young people presenting for health care or, more specifically, seeking STD screening. However, as HEDIS data and other reports clearly show, presentation to a clinic is not sufficient to ensure that screening will occur among the target population (National Committee for Quality Assurance, 2006). This fact suggests that some type of prompting—by either the patient or the provider—is necessary to ensure that appropriate screening takes place. However, studies have shown that most adolescents do not talk to their providers about STDs. According to the Kaiser Family Foundation (2002a), 59 percent of 15- to 17-year-olds had never spoken with their providers about STDs, and an even greater proportion (66 percent) had never spoken with their providers about condoms or other birth control methods. This situation is alarming in light of a recent finding that many adolescents—40 percent, as estimated by the Kaiser Family Foundation—believe that birth control pills or contraceptive injections will protect against STDs, including HIV (Kaiser Family Foundation, 2004).

That many adolescents are not speaking to their providers about STDs or other sexual health topics does not mean that they do not want to discuss these issues. Based on analysis of data from a nationally representative survey of 3,153 males and 3,575 females in grades 5 to 12, Ackard and Neumark-Sztainer (2001) found that adolescents expect their providers to discuss STDs. More than half (58 percent) of males and nearly two-thirds (65 percent) of females said their providers should discuss STDs with them, ranking the topic second in preference only to drugs. However, only 24 percent of males and 28 percent of females reported that they had actually discussed STDs with their providers. As an example of the danger this discrepancy poses, another analysis of this same dataset (Klein & Wilson, 2002) found that, although 18 percent of adolescents said they were not opposed to having sex without a condom, only 31 percent of those with this attitude had discussed it with their providers.

What makes this area of inquiry particularly significant is that research suggests that, although young people want to talk about these issues with their providers, many are unlikely to initiate the conversation because they are too embarrassed or uncomfortable (Ackard et al., 2001). Research from Mulvihill and colleagues (2005) supports findings of low levels of

communication about STDs with providers. Their study, which involved mailed survey responses from 1,689 adolescents enrolled in the State Children's Health Insurance Program (SCHIP), found that only 34 percent of the teens reported discussing STDs with their providers.

By contrast, a survey of 313 African American youths found that 61 percent reported discussing STDs at their most recent health care visit. Despite this promising finding, deficiencies in care still were apparent—only 29 percent of those who were sexually active said they were tested for STDs at their most recent health care visit (Merzel et al., 2004).

Indeed, much research has been conducted to explore adolescent visits for health care, including both general visits and visits for sexual health services. In addition, some research has examined the adolescent patient-provider interaction in order to better understand the myriad factors associated with communication about STDs and, ultimately, receipt of STD testing.

3a. Patient psychosocial factors

It is well-established that young people find communication with providers about STDs to be stressful, uncomfortable, and often embarrassing (Ackard et al., 2001; Blake et al., 2003; Lindberg et al., 2006; Tilson et al., 2004). For example, Ackard and colleagues (2001) found that between 45 and 50 percent of adolescents would be too “embarrassed, afraid, or uncomfortable” to discuss sexuality in general with their providers, and between 20 and 31 percent would be too embarrassed to discuss STDs specifically. However, perhaps more startling is the notion that many teens might not communicate with their providers at all about STDs, falsely believing that screening for STDs is a routine part of the health care visit (ASHA, 2005).

Psychosocial determinants of discussing sexual health issues with providers are being explored in the literature but to date are not fully understood. For example, Merzel and colleagues (2004) conducted an analysis of the health care visits of 313 mostly African American youths ages 11 to 21 years. The authors found that discussion of sexuality, and specifically STDs, during the visit was independently associated with positive attitudes toward discussing sexual health issues with a provider. In other words, adolescents who felt more favorably toward talking about sexual health with their providers were more likely to have actually done so.

In another study, adolescents' discussions of health risks with a provider (although not necessarily specific to STDs) were associated with viewing health information online and/or on television (Klein & Wilson, 2002). The authors note that, although this finding is interesting given the rise of Internet use among young people, it does not establish directionality and therefore is preliminary in nature. For example, it might be that messages on television or on the Internet encourage young people to discuss health risks with their providers; alternatively, young people who have discussed health risks during provider visits might pay more attention to health information in the media.

3b. Patient demographic factors

Reports of associations between provider communication about STDs and specific demographic characteristics are plentiful in the literature. Many studies examining communication about STDs have sought to associate communication with factors related to both the patient and the provider. Examples of characteristics include gender, age, and race/ethnicity, as explained below:

- **Gender.** Females are reported to be more likely to receive counseling about sexual health issues than males (Bethell et al., 2001; Merzel et al., 2004; Mulvihill et al., 2005; Shenkman et al., 2003).
- **Age.** Older adolescents might be more likely to discuss sexual health with providers (Mulvihill et al., 2004; Rand et al., 2005). Strikingly, Rand and colleagues (2005) demonstrated through medical record analysis of 23,378 adolescent ambulatory visits that, between the ages of 11 and 21 years, for each year increase in age, young people were 36 percent more likely to have discussed STDs or other sexual health issues with their providers.
- **Race/ethnicity.** The contribution of a young person's race or ethnicity to communication about STDs is not yet established in the literature. One large study of 1,689 12- to 19-year-old SCHIP enrollees found that white adolescents were more likely to report good communication with their providers than nonwhite adolescents, but this finding was only marginally significant and was not specific to STDs (Mulvihill et al., 2005). Another large retrospective analysis of medical records found that race was not associated with discussion of STDs or other sexual health risk factors (Shenkman et al., 2003). Nevertheless, evidence from studies of adults, (not specific to STDs), suggests that race/ethnicity, and specifically, race/ethnicity concordance, has a profound impact on visits with providers (Cooper and Powe, 2004). Patients with race concordant providers are more likely to report positive reviews of their visits, and independent analysis shows race concordant visits tend to be longer and more patient-centered.
- **Presence of risk factors.** Adolescents engaging in more risky behaviors might be more likely to talk about health risks with their providers (Bethell et al., 2001; Klein & Wilson, 2002; Shenkman et al., 2003). Interestingly, one study demonstrated that adolescents reporting more risk factors overall were more likely not only to discuss those specific risk factors but also to have discussed sexual health issues with providers regardless of whether they reported sexual health risk factors (Shenkman et al., 2003).

4. What psychosocial, demographic, and systemic factors increase the likelihood that health care providers will take a sexual health history and order STD testing according to recommended guidelines?

Key Findings:

- Providers who are more knowledgeable about STDs and testing, have more positive beliefs and attitudes about screening, and feel more comfortable with the topic are more likely to discuss STDs with their adolescent patients and to order testing.
- Female providers, younger physicians, and obstetrician-gynecologists appear more likely to order chlamydia and gonorrhea testing.
- Privacy during a health visit is a key determinant of whether sexual health topics are

Research regarding provider behavior during encounters with adolescents has yielded much insight into the myriad factors associated with screening for chlamydia. Some of the research has focused mainly on the conversations providers have with their adolescent patients; presumably, if sexual health is not discussed (outside of a reproductive health visit), screening is not likely to take place. Other research has explicitly focused on the ordering of tests for sexually transmitted diseases.

4a. Provider psychosocial factors

Although many providers do not discuss STDs with their adolescent patients, research does point to certain factors that make a provider more likely to do so. In addition, a significant amount of investigation has been undertaken to determine which providers are the best at screening their patients for STDs. Psychosocial factors identified include the following:

- **Knowledge.** Research suggests that providers who are more knowledgeable about chlamydia and its effects are more likely to screen their adolescent patients (Cook et al., 2001; McClure et al., 2006; Wiesenfeld et al., 2005). For example, in a study of 1,600 physicians across Pennsylvania, doctors were asked to complete a variety of knowledge-based questions about chlamydia and screening guidelines. Those physicians who reported routinely screening sexually active women for chlamydia were 3.9 times more likely to demonstrate good STD knowledge than physicians who reported screening less than half the time (Wiesenfeld et al., 2005). McClure and colleagues (2006) found that physicians who perceived themselves to be knowledgeable about chlamydia were more than twice as likely to screen annually for chlamydia, regardless of actual knowledge levels. Recent research also suggests that provider knowledge of new testing technologies is related to screening behavior; a lack of knowledge about non-invasive urine-based testing has been identified as a barrier to screening by providers (Bolan, 2006; Ratelle, 2006; Upstill, 2006).
- **Beliefs/attitudes.** Cook and colleagues (2001) found providers to be far more likely to routinely screen asymptomatic girls if they believed that most 18-year-olds in their practice were sexually active and if they felt responsible for providing information about STDs to their patients. Providers in the study were less likely to provide asymptomatic screening if

they believed that the prevalence of chlamydia was low. Likewise, Haley and colleagues (1999) found that obstetricians and gynecologists might not routinely screen adolescent patients because they assume that some patients are not at risk. In another study, providers' belief in the cost-effectiveness of routinely screening all sexually active adolescents was the strongest predictor of their willingness to do so (Boekeloo et al., 2002). Provider attitudes about time constraints may also influence decisions about screening. Marazzo and colleagues (2007) surveyed 59 providers across a variety of settings, and found that 24 percent of those who do not routinely screen asymptomatic young men for chlamydia cited a lack of time as a barrier.

- **Self-efficacy.** Some psychosocial factors identified in the literature pertain to physicians' feelings of self-efficacy regarding screening patients. For example, McClure and colleagues (2006) found that annual chlamydia screening was associated with greater confidence in conducting screenings and greater comfort recommending screening to patients. Similarly, some physicians in a study by Haley and colleagues (1999) reported that they do not routinely screen adolescent patients because they do not know how to appropriately ask about sexual history or they fear offending patients. Ozer and colleagues (2004) found greater provider self efficacy related to screening behaviors were associated with higher rates of screening of adolescents across a range of health risk behaviors.

4b. Provider demographic factors

In addition to the psychosocial factors identified as associated with screening young people for STDs, a few demographic factors also have been explored in the literature:

- **Gender.** Nearly every study examining provider behavior has associated female gender with a greater likelihood to screen for chlamydia and other STDs (Cook et al., 2001; Guerry et al., 2005; McClure et al., 2006; Wiesenfeld et al., 2005). The driver of this relationship is unknown, but some researchers have suggested that it might be due to female physicians feeling more comfortable discussing STDs with their female patients; alternatively, it could be due to greater chlamydia-related knowledge among female physicians, which has in turn been associated with higher screening rates (Wiesenfeld et al., 2005).
- **Seniority.** Research suggests that younger providers are more likely to screen patients than more senior providers. Wiesenfeld and colleagues (2005) directly measured physicians' ages and found that providers younger than 40 years had better STD knowledge than their older counterparts; in turn, knowledge was related to better rates of screening. Other studies, which used years in practice as a proxy for age, also found that less experienced physicians were more likely to screen patients for STDs (Fiscus et al., 2004; McClure et al., 2006).
- **Specialty.** Female patients might be more likely to receive screening if they are seen by an obstetrician or gynecologist, as compared with other physician types. Studies have shown that obstetricians and gynecologists are more likely to screen for chlamydia and gonorrhea than physicians from other specialties (Hogben et al., 2002; Burstein et al., 2001).

4c. Provider systems factors

Systems factors associated with screening for STDs are not as widely examined in the literature as psychosocial and demographic factors; nevertheless, some evidence does exist about specific systems factors, with the main explored factor being the confidentiality of adolescent visits.

Adolescent patients who have private visits with their providers (i.e., do not have a parent present during visits) appear more likely to receive counseling about sexual health and to receive STD testing (Bethell et al., 2001; Fairbrother et al., 2005; Merzel et al., 2004). For example, Fairbrother and colleagues (2005) found that adolescents (ages 12 to 18 years) who had a private visit with their providers were more likely to discuss risk behaviors, including sexual health; however, only 28 percent of the youths actually reported having private time with their providers. Likewise, Merzel and colleagues (2004) analyzed the visits of 313 mostly African American adolescents and found that the absence of a parent during the visit was independently associated not only with discussing sexual health but also with having received an STD test, although the effect was only significant for female teens. Specifically, findings showed that if a parent accompanied a teen to the health care visit, the teen was 72 percent less likely to have a discussion about sex with her provider, and the likelihood of being screened for an STD decreased by almost 50 percent.

By contrast, McKee and colleagues (2006) present findings from a survey of 819 female teens in urban public high schools. The survey showed that while 60 percent of the teens had confidential visits with their health care providers at the last visit, only 27 percent of those who were sexually active had disclosed this to their provider. Nevertheless, confidential care was a strong predictor of disclosure of sexual activity to the provider.

5. What interventions show promise for increasing adolescents' and young adults' general health-seeking behavior as well as health care seeking for STI testing and treatment?

Key Findings:

- Evaluations of mass media interventions have shown mixed results for prompting young people to seek STD testing.
- Interventions that include nontraditional testing sites appear promising for increasing screening. Examples include school-based screenings, street outreach, and home testing.
- Large-scale community-based programs show mixed results at increasing screening rates but appear promising at effecting changes in precursors such as knowledge,

Intervention research on screening for chlamydia and gonorrhea is well-published in the literature; however, the disparate research designs and intervention foci make it difficult to draw broad-based conclusions with respect to effectiveness. Nevertheless, many interventions do show promise.

5a. Mass media campaigns

Evaluation results from one mass media campaign are reported in the literature, and suggest that the use of a media campaign alone, in the absence of support programs, might be effective at driving calls to a hotline but may not result in increased screenings (Oh et al., 2002). The reported intervention was designed to (1) increase awareness of personal risk for chlamydial infection, (2) facilitate dissemination of information via a hotline, and (3) promote care-seeking behavior. The intervention activities included mail outreach, a television and radio campaign, information hotlines, and free testing for chlamydia. The hotline was called 642 times during the monitoring period, with the majority of the calls (92 percent) occurring during the 6 weeks of television ads. However, at the conclusion of the monitoring period, only 31 individuals had reported for screening.

Other national media campaigns have been evaluated, although the results are not published in the academic literature. For example, the Kaiser Family Foundation has an ongoing partnership with MTV to disseminate a sexual health public education campaign targeting young people ages 12 to 24 years. The campaign aims to raise awareness about personal STD risk, encourage discussions about safe sex, promote condom use, and encourage testing among viewers who are sexually active. In 2003, the Foundation released results of an evaluation of the campaign covering the period from 1997 to 2002 (Rideout, 2003). The evaluation included a nationally-representative sample of 16 to 24 year-olds obtained through random-digit dialing. Over half of youths ages 16 to 24 had seen the public service announcements, and 63 percent of those said they learned something new from the campaign. Additionally, among sexually active youth, 65 percent said the campaign made them more likely to seek testing for HIV or other STDs, and 24 percent reported having already done so as a result of the campaign. Similarly, evaluation of a sexual health booklet that accompanies the television spots revealed that 30 percent of respondents said they had seen a doctor because of something they read in the booklet, and a third had been tested for HIV or another STD as a result of reading the booklet.

5b. Nontraditional testing sites

A variety of interventions have been published that include testing outside the usual clinic setting, such as at school and other community sites. For example, Marazzo and colleagues (2007) found that offering testing in nonclinic settings might be a particularly useful strategy for screening asymptomatic male teens and young adults who might otherwise be hard to reach. Sixty-four percent of asymptomatic males (ages 13 to 29 years) across a variety of nonclinic settings, including detention facilities, jails, and schools, were willing to be tested for chlamydia using a free urine-based test, and the likelihood of testing was increased among younger males, those who had not seen a provider in more than a year, and those who had no history of STD. Results from other studies of nontraditional testing sites, not exclusive to males, are included below.

School-based screening. Asbel and colleagues (2006) report the results of a massive pilot program conducted in the Philadelphia public school system. The program consisted of a 25-minute education session about STDs, followed by the opportunity for all of the students to be screened using a urine-based test. In total, the program screened more than 19,000 high school students for chlamydia and gonorrhea, or about 65 percent of its student population. Of the

students submitting samples for analysis, more than 1,000 were positive for chlamydia, 99 percent of whom were subsequently treated.

In another pilot program, a school district in Louisiana offered free chlamydia and gonorrhea screening to all of its male and female student athletes during sports preparticipation physical exams (Nsuami et al., 2003). The authors suggest that sports preparticipation visits are an ideal and valuable venue for screening because students might routinely submit urine samples at these visits and because, for many students, the sports physical is the only regular contact with a health care provider. The intervention yielded 636 samples for testing, of which 6.5% of girls were positive for chlamydia and 2% of girls were positive for gonorrhea. More than 90 percent of the positive samples were from students who reported being asymptomatic.

Street outreach. An outreach program conducted to screen homeless youth proved particularly effective at encouraging young people to be tested for chlamydia and gonorrhea (Auerswald et al., 2006). Nearly all (99 percent) of the young people approached agreed to be screened, and of a total of 218 homeless teens and young adults screened, about 7 percent tested positive for chlamydia and 1 percent for gonorrhea. All of the youths who tested positive were treated, and 55 percent reported for retesting after 6 months. None of those retested was positive for chlamydia or gonorrhea.

In collaboration with local faith-based organizations, the San Francisco Department of Public Health developed a “street medicine” program to screen African American adolescents for chlamydia and gonorrhea (Moss et al., 2004; Sieverding et al., 2005). Peer educators talked to young people about STDs and promoted screening at a variety of nonclinic settings such as after-school programs, YMCA locations, and other “hangout spots.” A total of 470 youth were tested, and all who were positive (N= 19) received field-delivered therapy. The authors note the intervention was particularly successful at reaching adolescent males, a group often thought to be difficult to engage. They suggest that program slogans such as, “handle your business,” (which communicated the need for all sexually-active youths to be screened) and, “it is as easy as peeing in a cup,” (which spoke to the ease of testing) resonated particularly well with the target audience.

Home testing. Research suggests that home testing is an attractive option for young people—particularly among those who are asymptomatic and those for whom confidentiality is a chief concern.

In one study, advertisements around the community and in local publications invited female teens and young adults (ages 14 and older) to order a free chlamydia home testing kit by visiting a Web site (Gaydos et al., 2006). The kits, which consisted of a urine test and a vaginal swab, also could be anonymously obtained from several locations in the community. After returning the test in the mail, participants were asked to complete questionnaires about their experiences. Results indicated that 90 percent preferred home-based self-collection of samples, 94 percent rated collection easy or very easy, and 86 percent would use the Internet program again. Ordering through the Web was more popular than community pickup; 97 percent of the kits were requested online, of which 88 percent were returned. The authors also note that home testing kits might be especially effective for reaching high-risk groups because high-risk behavior was found

among many users of the kit. For example, a third of users reported previous infection, and 86 percent reported inconsistent condom use. In addition, only 29 percent of the kit users had received a pelvic exam in the previous year.

Other research also supports the potential for home STD testing. A clinic sample of ethnically diverse, sexually active adolescent females (ages 13 to 20 years) were asked to name their first choice for the site of a urine-based STD test (Tebb et al., 2004a). In response, 52 percent ranked home testing as their first choice, while 30 percent preferred clinic-based testing. Further analysis showed that adolescent girls preferred home testing, particularly if they were concerned they had an STD. However, a major caveat to this study is that only 22 percent of the respondents said they were likely to self-test if they were asymptomatic.

5c. Community-based interventions

Several community-based interventions are reported in the literature, including the studies summarized in the “street outreach” section above. The primary distinction between these two categories is that studies in this section did not include nonclinic testing sites.

The Gonorrhea Community Action Project (GCAP), which was designed to increase preventive health care seeking among adolescents, took place in New York City and suburban Maryland (VanDevanter et al., 2005). The intervention was composed of a three-session skills-building workshop, which was gender-specific and facilitated by gender-matched health educators and peer leaders. Results show that the intervention significantly increased preventive health care seeking among female adolescents; however, there was no effect in males. Female participants were more likely to have scheduled a health care appointment, undergone a checkup, and discussed with family or friends the importance of routine health care visits. Furthermore, the authors note that the intervention group changed along a specific theoretical path; that is, participants receiving the intervention shifted their health care beliefs about routine health care and sexual histories—they perceived more value in seeking routine health care. These changes in beliefs were correlated with a positive increase in attitude toward health care seeking, as well as increased intentions to make an appointment to seek care.

Preliminary findings from a second iteration of the GCAP reflect its implementation in Los Angeles (Larro et al., unpublished). Activities included the distribution of peer-constructed small media materials, peer outreach, and the establishment of a resource center that provided screening to teens and young adults (ages 15 to 29). Recognition of campaign materials increased from 8 to 77 percent in the intervention area, whereas recognition in the comparison area never rose above 7 percent. Awareness of STD testing and treatment facilities also increased from 9 to 66 percent among respondents in the intervention area, compared with 2 to 12 percent among comparison area respondents. Although the authors note that the intervention did not appear to have much impact on behavioral and cognitive measures, the effects regarding knowledge and self-efficacy were more pronounced among those who recognized the materials. The findings suggest that a stronger, or perhaps longer-duration, intervention is necessary to achieve a measurable behavior change and that changes in behavior cannot be expected with campaign awareness alone.

5d. Systems interventions

A variety of systems interventions have been reported in the literature. For example, one study examined various methods to encourage re-testing of patients who initially test positive for chlamydia or gonorrhea (Malotte et al., 2004). Male and female STD clinic patients (ages 14 to 30 years) who recently received treatment for chlamydia or gonorrhea were randomly assigned to groups applying various followup techniques. Telephone/mail reminders were the most effective method—more effective than incentives or motivational counseling. Nonetheless, return rates were low among all of the tested methods (between 7 and 29 percent).

Brindis and colleagues (2005) present findings from another clinic-based study, which examined the effectiveness of the Peer Providers of Reproductive Health Services to Teens model. The program provided adolescent females with outreach, education, and low- or no-cost services in an adolescent-centered and confidential environment. During the program, peer counselors were available at the facility and for telephone counseling and followup. Evaluation results suggest that the peer provider model is a promising addition to the mix of clinic-based services, particularly for certain subgroups of clients. Female participants were more likely than controls to return for an annual exam and to make three or more visits during the study period. The full intervention was particularly effective for females who were Hispanic, had been born to adolescent mothers, or had had more than one sexual partner in the 6 months before their first clinic visit.

6. What interventions show promise for promoting the health care provider practices of taking a sexual health history and ordering tests for STIs according to recommended guidelines?

Key Finding:

- Provider behavior can be changed through information sessions about STDs, coupled with systems-level changes that support increased screening

Implementation of the American Medical Association's Guidelines for Adolescent Preventive Services (1997)—a systematic and comprehensive approach to providing preventive care to adolescents and young adults—has been difficult to achieve. For example, one study by the UCLA Center for Health Policy Research found that 62 percent of managed care organizations servicing Medicaid beneficiaries in metropolitan areas with high rates of STDs had neither STD guidelines nor associated training for primary care physicians (Brown et al., 2000). Some interventions to affect provider counseling and screening behavior are now being undertaken, the results of which were recently published. Some researchers are even advocating that preventive health services become a standard part of every clinical encounter because, according to an editorial in the *Journal of Adolescent Health* (Irwin, 2005), few adolescents have preventive health visits, but 73 percent of adolescents have a clinical encounter each year.

Most of the provider interventions are aimed at systems-level targets. For example, interventions have been successful in increasing chlamydia screening for both male and female adolescents in a large managed care setting (Shafer et al., 2002). In one study, each participating clinic

established a quality improvement team (adolescent medicine specialist, clinic manager, medical assistant, and receptionist) that established protocols for gathering sexual histories and collecting urine samples (Shafer et al., 2002). Monthly reviews of screening rates and discussion about barriers and their reduction resulted in incremental improvements in screening rates. Screening rates among adolescent girls increased significantly from 5 to 47 percent over 18 months; control sites increased from 14 to 21 percent over this period.

Another systems-level intervention for adolescent health care providers involved both educational and administrative components (Ozer et al., 2005). Providers in the intervention sites attended an all-day skills-building educational workshop related to screening and counseling of adolescents for health risk behaviors. The workshop focused on adolescent health, confidentiality, screening, and how to provide anticipatory guidance and counseling related to 6 risk behaviors; it consisted of didactic presentations as well as interactive components, such as discussions and role playing. A second part of the intervention was the use of a screening questionnaire for adolescents, and the establishment of a charting system for providers to document their screening and counseling during visits. Intervention sites were grouped into two cohorts—some received only the educational component, while others received both components. The authors found that screening for health risk behaviors at intervention sites increased from 58 percent at baseline to 83 percent after the intervention; similarly, counseling rates increased from 52 percent to 78 percent. Notably, researchers found that the educational workshop had the largest impact on screening and counseling rates, with the addition of the administrative component not making additional significant improvements.

7. What gaps in the research should we seek to address with focus groups or other research?

Taking into consideration the findings of this review, it becomes apparent which areas have been explored in depth by researchers and which warrant further exploration. These “gaps” in the research include both client and provider psychosocial factors.

On the client side, gaps in the literature include the following:

- **Benefits of testing.** The majority of literature exploring adolescents’ perspectives on testing focuses on barriers. However, from the adolescent perspective, some benefits must exist to seeking testing and knowing one’s STD status. What are these benefits, and how do they interplay with perceived barriers to affect screening decisions? Knowing the answers to these questions will help focus efforts to increase screening.
- **Doer/nondoer analysis.** Many studies involve the responses of young people who have already presented for screening or other health care services; other studies include national datasets. Yet few, if any, studies have sought to directly examine the differences between those who seek testing and those who do not. This analysis would afford a better understanding of the drivers of each behavior and the best approach to reach the intended audience.
- **Parent and partner communication.** Although many teens report talking to their parents or partners before their reproductive health care visits, the content of these discussions is not well understood. Nor is it understood how much relative weight these conversations have in decisions regarding testing.

- **Peer communication.** Evidence suggests that older adolescents often turn to friends for information about health issues. Yet at the same time, STDs comprise a sensitive topic which may be difficult to discuss with peers, especially if an STD is suspected. The complexity of peer communication around STDs, and the influence of such communication on testing decisions, is not well understood.
- **Provider communication.** It is well documented that young people find talking with their providers about sexual health issues to be an uncomfortable prospect. Yet those who do discuss these issues with their providers might be more likely to receive anticipatory guidance and to be screened for STDs. Therefore, it would be valuable to have a better understanding of the factors that facilitate these conversations, as well as the factors contributing to patients' specific requests for STD testing.
- **Cultural differences.** Few studies have examined how psychosocial factors might vary by culture. Although audiences addressed in the research vary in terms of composition, the disparate designs of the numerous published studies make it difficult to draw conclusions about potential cultural differences.

Provider research in the literature also leaves room for more investigation. Gaps in provider-focused research include the following areas:

- **Attitudes and beliefs.** Research has shown that providers with more favorable attitudes and beliefs about screening are more likely to test their patients for STDs. What is not understood are the drivers of these attitudes and beliefs.
- **Systems factors.** Providers who have good knowledge about STDs and positive attitudes toward screening still might not adhere to screening guidelines if they operate in a system that does not support the guidelines. How then do systems factors interplay with psychosocial factors to influence screening practices of providers?

Intervention research also poses several gaps that can be addressed with future campaigns and further publication of evaluation results:

- **Mass media campaigns.** Only one recent mass media campaign was identified in the academic literature, and it did not show powerful results with respect to its impact on screening. Non-published evaluations of other public education campaigns are available, and show promise for impacting knowledge, attitudes, and behaviors around STDs. Further research on the use of media campaigns regarding screening are needed in order to better understand their utility and limitations.
- **Cost analysis.** None of the published intervention research described here included an analysis of the program cost per case of CT detected or of the cost per additional person seeking health care. Although a cost analysis of interventions is not in the purview of the current contract, filling this notable gap in the literature would facilitate a direct comparison of interventions in terms of cost-effectiveness. For example, although community-based peer education programs show promise, it is not clear how they compare with other programs, such as home testing kits, in terms of cost per person screened.

V. Conclusions

Although significant gaps exist in the research on adolescent screening for chlamydia, several conclusions can be drawn on the basis of the findings in this literature review. The variety of studies published in the literature speak to the plethora of factors that contribute to the issue and to the opportunities for intervention.

It is clear that significant barriers exist to optimal screening of adolescent girls and women for chlamydia. Because both patients and their providers find the issue uncomfortable to talk about, many times the conversation does not take place at all. Yet current guidelines recommend universal chlamydia screening of all sexually active young women ages 15 to 25, an objective that is difficult to meet if providers do not assess the sexual history of their patients. This deficit is evidenced by the low screening rates across the country.

However, it is promising that teens say they do want to talk to providers about topics related to sexual health. In addition, teens appear open to communicating with their partners when they know what to say and how to best approach the topic. These factors are important because young people's decisions to pursue testing do not occur in a void; communication is likely a key contributor to their screening behaviors. This area is ripe for further exploration and might prove to be a key target of intervention research.

Interestingly, many of the interventions published in the literature focus not on communication issues but rather on systems-level changes, most of which involve offering testing to young people in locations other than providers' offices. The abundance of this type of research speaks to the fact that many investigators are choosing not to wait for patients to present for traditional health care visits; rather, they are interested in taking the screening to the clients. Many of these interventions show encouraging results in terms of their effectiveness at getting young people screened for STDs.

Likewise, provider interventions to change screening behaviors show promise. Much is known about providers who are likely to screen their patients, and we are now beginning to understand what is required to bring other providers in line with current screening guidelines.

In this social marketing campaign it will be vital for CDC to develop a larger strategy than simply educating clients about the disease and the test. Only a multi-pronged and coordinated social marketing approach targeting at a minimum patients and providers is likely to result in any behavior change. Concurrent with this campaign, consideration should also be given to addressing barriers presented by inconvenient access to services, provider encounters which do not allow private discussion of health issues, service payment issues, and concerns about the nature of the test itself. Consideration should also be given to addressing the widespread stigma surrounding the STDs and the tests. Interventions to overcome this stigma among peers, sex partners and parents must be considered.

Works Cited

Aalsma MC, Fortenberry JD, Sayegh MA, Orr DP. (2006). Family and friend closeness to adolescent sexual partners in relationship to condom use. *Journal of Adolescent Health, 38*, 173–178.

Ackard DM, Neumark-Sztainer D. (2001). Health care information sources for adolescents: Age and gender differences on use, concerns, and needs. *Journal of Adolescent Health, 28*, 170–176.

American Medical Association. (1997). *Guidelines for Adolescent Preventive Services: Recommendations Monograph*. Chicago: American Medical Association. Available at <www.ama-assn.org/ama/upload/mm/39/gapsmono.pdf>. [Accessed March 2, 2007].

American Social Health Association (ASHA). (2005). State of the nation: Challenges facing STD prevention among youth—research, review, and recommendations. Triangle Park, NC: American Social Health Association.

American Social Health Association (ASHA). (2006). New data indicates few young Americans tested for common STD. Press release, March 28, 2006. Available at <www.ashastd.org/news/news_pressreleases_GetTested.cfm>. [Accessed October 12, 2006].

Andrinopoulos A, Kerrigan D, Ellen J. (2006). Understanding sex partner selection from the perspective of inner-city black adolescents. *Perspectives on Sexual and Reproductive Health, 38*(3), 132–138.

Armstrong B. (2003). The Young Men’s Clinic: Addressing men’s reproductive health and responsibilities. *Perspectives on Sexual and Reproductive Health, 35*(5), 220–225.

Asbel LE, Newbern EC, Salmon M, Spain CV, Goldberg M. (2006). School-based screening for chlamydia trachomatis and neisseria gonorrhoeae among Philadelphia public high school students. *Sexually Transmitted Diseases, 33*(10), 614–620.

Auerswald CL, Sugano E, Ellen JM, Klausner JD. (2006). Street-based STD testing and treatment of homeless youth are feasible, acceptable and effective. *Journal of Adolescent Health, 38*(3), 208–212.

Banikarim C, Chacko MR, Wiemann CM, Smith PB. (2003). Gonorrhea and chlamydia screening among young women: Stage of change, decisional balance, and self-efficacy. *Journal of Adolescent Health, 32*(4), 288–295.

Barth KR, Cook RL, Downs JS, Switzer GE. (2002). Social stigma and negative consequences: Factors that influence college students’ decisions to seek testing for sexually transmitted infections. *Journal of the American College Health Association, 4*(50), 153–159.

Bethell C, Klein J, Peck C. (2001). Assessing health system provision of adolescent preventive services: The young adult health care survey. *Medical Care, 39*(5), 478–490.

Blake D, Kearney M, Oakes JM, Druker S, Bibace R. (2003). Improving participation in chlamydia screening programs: Perspectives of high-risk youth. *Archives of Pediatrics & Adolescent Medicine*, 157, 523–529.

Boekeloo BO, Snyder MH, Bobbin M, Burstein GR, Conley D, Quinn TC, Zenilman JM. (2002). Provider willingness to screen all sexually active adolescents for chlamydia. *Sexually Transmitted Infections*, 78(5), 369–373.

Bolan G. (2006). The California Chlamydia Action Coalition: Lessons learned from a 5 year public-private partnership. Presentation to the 2006 National STD Prevention Conference. Available at <<http://cdc.confex.com/cdc/std2006/techprogram/S7401.HTM>>. [Accessed April 12, 2007].

Brindis CD, Llewelyn L, Marie K, Blum M, Biggs A, Maternowska C. (2003). Meeting the reproductive health care needs of adolescents: California's family planning access, care, and treatment program. *Journal of Adolescent Health*, 32(Suppl6), 79–90.

Brindis C, Geierstanger S, Wilcox N, McCarter V, Hubbard A. (2005). Evaluation of a peer provider reproductive health service model for adolescents. *Perspectives on Sexual and Reproductive Health*, 37(2), 85–91.

Brown E, Nakashima J, Pourat N, Razack N, Chiu S. (2000). Delivery of sexually transmitted disease services in Medicaid and managed care. *UCLA Center for Health Policy Research*.

Burstein GR, Snyder MH, Conley D, Boekeloo BO, Quinn TC, Zenilman JM. (2001) Adolescent chlamydia testing practices and diagnosed infections in a large managed care organization. *Sexually Transmitted Diseases*, 28(8), 477–483.

Centers for Disease Control and Prevention (CDC). (2007). Sexually Transmitted Disease Surveillance 2006 Supplement, Chlamydia Prevalence Monitoring Project Annual Report 2006. Atlanta, GA: U.S. Department of Health and Human Services, CDC. Available at <www.cdc.gov/std/Chlamydia2006/CTSurvSupp2006Short.pdf>.

U.S. Centers for Disease Control and Prevention (CDC). (2006a). Trends in Reportable Sexually Transmitted Diseases in the United States, 2005. Available at <www.cdc.gov/std/stats/trends2005.htm#trendschlamydia>. [Accessed March 29, 2007].

CDC. (2007). Sexually Transmitted Disease Surveillance, 2006. Atlanta, GA: U.S. Department of Health and Human Services. Available at <www.cdc.gov/std/stats/pdf/Surv2006.pdf>. Last accessed January 14, 2008.

Chacko MR, Wiemann CM, Kozinetz CA, Diclemente RJ, Smith PB, Velasquez MM, Von Sternberg K. (2006). New sexual partners and readiness to seek screening for chlamydia and gonorrhea: Predictors among minority young women. *Sexually Transmitted Infections*, 82(1), 75–79.

Cook RL, Wiesenfeld HC, Ashton MR, Krohn MA, Zamborsky T, Scholle SH. (2001). Barriers to screening sexually active adolescent women for chlamydia: A survey of primary care physicians. *Journal of Adolescent Health*, 28, 204–210.

Cooper LA, Powe NR. (2004). Disparities in patient experiences, health care processes, and outcomes: The role of patient-provider racial, ethnic, and language concordance. A report by the Commonwealth Fund. Available at <www.cmwf.org/usr_doc/Cooper_disparities_in_patient_experiences_753.pdf>. Accessed March 29, 2007.

Crosby RA, Wingwood GM, DiClemente RJ, Rose ES. (2002). Family-related correlates of sexually transmitted disease and barriers to care: A pilot study of pregnant African American adolescents. *Family & Community Health*, 25(2), 16–27.

Crosby R, Voisin D, Salazar LF, DiClemente RJ, Yarber WL, Caliendo AM. (2006). Family influences and biologically confirmed sexually transmitted infections among detained adolescents. *American Journal of Orthopsychiatry*, 76(3), 389–394.

Cunningham SD, Kerrigan D, Pillay KB, Ellen JM. (2005). Understanding the role of perceived severity in STD-related care-seeking delays. *Journal of Adolescent Health*, 37, 69–74.

U.S. Department of Health and Human Services (DHHS). (2000). Healthy People 2010. 2nd ed. With Understanding and Improving Health and Objectives for Improving Health. 2 vols. Washington, DC: U.S. Government Printing Office.

DiClemente RJ, Wingood GM, Crosby R, Sionean C, Cobb BK, Harrington K, Davies S, Hook EW, Oh, MK. (2001). Parental monitoring: Association with adolescents' risk behaviors. *Pediatrics*, 107(6), 1363-1368.

Eastman K, Corona R, Ryan G, Warsofsky A, Schuster M. (2005). Worksite-based parenting programs to promote healthy adolescent sexual development: A qualitative study of feasibility and potential content. *Perspectives on Sexual and Reproductive Health*, 37(2), 62–69.

Elliott BA, Larson JT. (2004). Adolescents in mid-sized and rural communities: Foregone care, perceived barriers, and risk factors. *Journal of Adolescent Health*, 35, 303–309.

Ethier KA, DeRosa CJ, Kim DH, Afifi A, Kerndt PR. (2006). Multi-level correlates of adolescent sexual behavior and risk for STD. Presentation given May 9, 2006 at the National STD Prevention Conference.

Fairbrother G, Scheinmann R, Ostheimer B, Dutton MJ, Newell K, Fuld J, Klein JD. (2005). Factors that influence adolescent reports of counseling by physicians on risky behavior. *Journal of Adolescent Health*, 37, 467–476.

Farley TA, Cohen DA, Elkins W. (2003). Asymptomatic sexually transmitted disease: The case for screening. *Preventive Medicine*, 36(4), 502–509.

Fiscus L, Ford C, Miller W. (2004). Infrequency of sexually transmitted disease screening among sexually experienced U.S. female adolescents. *Perspectives on Sexual and Reproductive Health*, 36(6), 233–238.

Ford C. (2001). Confidentiality and adolescents' willingness to consent to sexually transmitted disease testing. *Archives of Pediatrics & Adolescent Medicine*, 155, 1072–1073.

Ford C, Jaccard J, Millstein S, Bardsley P, Miller W. (2004). Perceived risk of chlamydial and gonococcal infection among sexually experienced young adults in the United States. *Perspectives on Sexual and Reproductive Health*, 36(6), 258–264.

Fortenberry JD. (1997). Health care seeking behaviors related to sexually transmitted diseases among adolescents. *American Journal of Public Health*, 87(3), 417–420.

Fortenberry JD, Tu W, Harezlak J, Katz BP, Orr DP. (2002). Condom use as a function of time in new and established adolescent sexual relationships. *American Journal of Public Health*, 92(2), 211–213.

Gaydos CA, Dwyer K, Barnes M, Rizzo-Price PA, Wood BJ, Flemming T, Hogan MT. (2006). Internet-based screening for chlamydia trachomatis to reach non-clinic populations with mailed self-administered vaginal swabs. *Sexually Transmitted Diseases*, 33(7), 451–457.

Gerberding JL. (2004). *Report to Congress: Infertility and prevention of sexually transmitted diseases 2000–2003*. Available at < <http://www.cdc.gov/std/infertility/ReportCongressInfertility.pdf>>. Accessed March 29, 2007.

Guerry SL, Bauer HM, Packel L, Samuel M, Chow J, Rhew M, Bolan G. (2005). Chlamydia screening and management practices of primary care physicians and nurse practitioners in California. *Journal of General Internal Medicine*, 20(12), 1102–1107.

Haley N, Manheux B, Tivard M, Gervais A. (1999). Sexual health risk assessment and counseling in primary care: How involved are general practitioners and obstetrician-gynecologists? *American Journal of Public Health*, 89, 899–902.

Harper C, Callegari L, Raine T, Blum M, Darney P. (2004). Adolescent clinic visits for contraception: Support from mothers, male partners and friends. *Perspectives on Sexual and Reproductive Health*, 36(1), 20–26.

Hogben M, St. Lawrence JS, Kasprzyk D, Montano DE, Counts GW, McCree DH, Phillips W, Scharbo-DeHaan M. (2002). Sexually transmitted disease screenings by United States obstetricians and gynecologists. *Obstetrics and Gynecology*, 100(4), 801–807

Hogben M, Ledsy R, Middlestadt A, VanDevanter N, Messeri P, Merzel C, Bleakley A, Sionean CK, Lawrence JS. (2005). Psychological mediating factors in an intervention to promote adolescent health care seeking. *Psychology, Health & Medicine*, 10(1), 64–77.

Irwin CE. (2005). Clinical preventive services for adolescents: Still a long way to go. *Journal of Adolescent Health, 37*, 85–86. [Editorial].

Jones R, Singh S, Purcell A. (2005). Parent-child relations among minor females attending U.S. family planning clinics. *Perspectives on Sexual and Reproductive Health, 37*(4), 192–201.

Kaiser Family Foundation. (2001). *SexSmarts, a series of national surveys of teens about sex: Sexually transmitted diseases*. Available at <www.kff.org/entpartnerships/seventeen/index>. [Accessed February 20, 2007].

Kaiser Family Foundation. (2002a). *SexSmarts, a series of national surveys of teens about sex: Communication*. Available at <www.kff.org/entpartnerships/seventeen/index>. [Accessed February 20, 2007].

Kaiser Family Foundation. (2002b). *SexSmarts, a series of national surveys of teens about sex: Relationships*. Available at <www.kff.org/entpartnerships/seventeen/index>. [Accessed February 20, 2007].

Kaiser Family Foundation. (2004). *SexSmarts, a series of national surveys of teens about sex: Birth control and protection*. Available at <www.kff.org/entpartnerships/seventeen/index>. [Accessed February 20, 2007].

Klein JD, Wilson KM. (2002). Delivering quality care: Adolescents' discussion of health risks with their providers. *Journal of Adolescent Health, 30*(3), 190–195.

Lane MA, McCright J, Garrett K, Millstein SG, Bolan G, Ellen JM. (1999). Features of sexually transmitted disease services important to African American adolescents. *Archives of Pediatrics & Adolescent Medicine, 153*(8), 829–833.

Larro M, Malotte K, Penniman T, Hogben M, St. Lawrence JS, VanDevanter NL, Middlestadt S, Gaines JW. (unpublished). Outcomes from the Gonorrhea Community Action Project (GCAP) small media community awareness intervention in Los Angeles County, California.

Lindberg C, Lewis-Spruill C, Crownover R. (2006). Barriers to sexual and reproductive health care: Urban male adolescents speak out. *Issues in Comprehensive Pediatric Nursing, 29*, 73–88.

Malotte K, Ledsky R, Hogben M, Larro M, Middlestat S, St.Lawrence JS, Olthoff G, Settlege RH, VanDevanter NL: GCAP Study Group. (2004). Comparison of methods to increase repeat testing in persons treated for gonorrhea and/or chlamydia at public sexually transmitted disease clinics. *Sexually Transmitted Diseases, 11*(31), 637–642.

Marrazzo JM, Ellen JM, Kent C, Gaydos C, Chapin J, Dunne EF, Rietmeijer CA. (2007). Acceptability of urine-based screening for chlamydia trachomatis to asymptomatic young men and their providers. *Sexually Transmitted Diseases, 34*(3), 147–153.

- Marcell AV, Halpern-Felsher BL. (2005). Adolescents' health beliefs are critical in their intentions to seek physician care. *Preventative Medicine, 41*, 118–125.
- McClure JB, Scholes D, Grothaus L, Fishman P, Reid R, Lindenbaum J, Thomson RS. (2006). Chlamydia screening in at-risk adolescent females: An evaluation of screening practices and modifiable screening correlates. *Journal of Adolescent Health, 38*, 726–733.
- McKee MD, Fletcher J, Schechter CB. (2006). Predictors of timely initiation of gynecologic care among urban adolescent girls. *Journal of Adolescent Health, 39*, 183–191.
- Merzel CR, VanDevanter NL, Middlestadt S, Bleakley A, Ledsky R, Messeri PA. (2004). Attitudinal and contextual factors associated with discussion of sexual issues during adolescent health visits. *Journal of Adolescent Health, 25*(2), 108–115.
- Moss NJ, Gallaread A, Siller J, Klausner JD. (2004). “Street medicine”: Collaborating with a faith-based organization to screen at-risk youths for sexually transmitted diseases. *American Journal of Public Health, 7*(94), 1081–1084.
- Mulvihill BA, Jackson AJ, Mulvihill FX, Romaine M, Gyaben S, Telfair J, Caldwell C. (2005). The impact of SCHIP enrollment on adolescent-provider communication. *Journal of Adolescent Health, 37*, 94–102.
- National Committee for Quality Assurance. The state of health care quality: Industry trends and analysis. (2006). Available at <www.ncqa.org/Communications/SOHC2006/SOHC_2006.pdf>. [Accessed November 21, 2006].
- Nsuami M, Elie M, Brooks BN, Sanders LS, Nash TD, Makonnen F, Taylor SN, Cohen DA. (2003). Screening for sexually transmitted diseases during preparticipation sports examination of high school adolescents. *Journal of Adolescent Health, 32*(5), 336–339. Erratum in: *Journal of Adolescent Health, 33*(1), 49.
- Oh MK, Grimley DM, Merchant JS, Brown PR, Cecil K, Hook EW. (2002). Mass media as a population-level intervention tool for chlamydia trachomatis screening: Report of a pilot study. *School of Medicine, University of Alabama at Birmingham, 31*(1), 40–47.
- Ozer EM, Adams SH, Eieder Gardner L, et al. (2004). Provider self-efficacy and the screening of adolescents for risky health behaviors. *Journal of Adolescent Health, 35*, 101–107.
- Ozer EM, Adams SH, Lustig JL, Gee S, Garber AK, Gardner LR, Rehbein M, Addison L, Irwin CE. (2005). Increasing the screening and counseling of adolescents for risky health behaviors: A primary care intervention. *Pediatrics, 115*(4), 960–968.
- Raine T, Marcell A, Rocca C, Harper C. (2003). The other half of the equation: Serving young men in a young women's reproductive health clinic. *Perspectives on Sexual and Reproductive Health, 35*(5), 208–214.

Rand CM, Auinger P, Klein JD, Weitzman M. (2005). Give counseling at adolescent ambulatory visits. *Journal of Adolescent Health*, 37, 87–93.

Ratelle S. (2006). The Massachusetts chlamydia toolkit and training experience. Presentation to the 2006 National STD Prevention Conference. Available at <<http://cdc.confex.com/cdc/std2006/techprogram/S7401.HTM>>. [Accessed April 12, 2007].

Rees E. (1980). Treatment of pelvic inflammatory disease. *Am J Obstet Gynecol*;138:1042-7.

Reid RJ, Scholes D, Grothaus L, Truelove Y, Fishman P, McClure J, Grafton J, Thompson RS. (2005). Is provider continuity associated with chlamydia screening for adolescent and young adult women? *Preventative Medicine*, 41(5–6), 865–872.

Rideout VJ. (2003). *Reaching the MTV generation: Recent research on the impact of the Kaiser Family Foundation/MTV public education campaign on sexual health*. Menlo Park, CA: Kaiser Family Foundation.

Serlin M, Shafer MA, Tebb K, Gyamfi AA, Moncada J, Schachter J, Wibbelsman C. (2002). What sexually transmitted disease screening method does the adolescent prefer? Adolescents' attitudes toward first-void urine, self-collected vaginal swab, and pelvic examination. *Archives of Pediatrics & Adolescent Medicine*, 156(6), 588–591.

Shafer MA, Tebb KP, Pantell RH, Wibbelsman CJ, Neuhaus JM, Tipton AC, Kunin SB, Ko TH, Schweppe DM, Bergman DA. (2002). Effect of a clinical practice improvement intervention on Chlamydial screening among adolescent girls. *Journal of the American Medical Association*, 288(22), 2846–2852.

Shenkman E, Youngblade L, Nackashi J. (2003). Adolescents' preventive care experiences before entry into the State Children's Health Insurance Program (SCHIP). *Pediatrics*, 112(6 Pt 2), e533.

Sherrow G, Ruby T, Braverman, PK, Bartle, N, Gibson, S, Hock-Long, L. (2003). Man2Man: A promising approach to addressing the sexual and reproductive health needs of young men. *Perspectives on Sexual and Reproductive Health*, 35(5), 215–219.

Sieverding J, Boyer CB, Siller J, Gallaread A, Krone M, Chang YJ. (2005). Youth united through health education: Building capacity through a community collaborative intervention to prevent HIV/STD in adolescents residing in a high STD prevalent neighborhood. *AIDS Education & Prevention*, 17(4), 395–385.

Stamm WE, Guinan ME, Johnson C, Starcher T, Holmes KK, McCormack WM. (1984). Effect of treatment regimens for *Neisseria gonorrhoeae* on simultaneous infection with *Chlamydia trachomatis*. *N Engl J Med*;310:545-9.

Tebb KP, Pauku MH, Pai-Dhungat MR, Gyamfi AA, Shafer MA. (2004a). Home STI testing: The adolescent female's opinion. *Journal of Adolescent Health*, 35(6), 462–467.

Tebb KP, Shafer MA, Wibbelsman CJ, Pecson S, Tipton AC, Newhaus JM, Ko TH, Pantell RH. (2004b). To screen or not to screen: Prevalence of *C. Trachomatis* among sexually active asymptomatic male adolescents attending health maintenance pediatric visits. *Journal of Adolescent Health, 34*(3), 166–168.

Tebb KP, Pantell RH, Wibbelsman CJ et al. (2005). Screening sexually active adolescents for chlamydia trachomatis: What about the boys? *American Journal of Public Health, 95*, 1806–1810.

Tilson EC, Sanchez V, Ford CL, Smurzynski M, Leone PA, Fox KK, Irwin K, Miller WC. (2004). Barriers to asymptomatic screening and other STD services for adolescents and young adults: Focus group discussions. *BMC Public Health, 21*(4), 1–8.

Trent M, Millstein SG, Ellen JM. (2006). Gender-based differences in fertility beliefs and knowledge among adolescents from high sexually transmitted disease-prevalence communities. *Journal of Adolescent Health, 38*(3), 282–287.

Upstill C. (2006). STOP STDS!. Presentation to the 2006 National STD Prevention Conference. Available at <<http://cdc.confex.com/cdc/std2006/techprogram/S7401.HTM>>. [Accessed April 12, 2007].

U.S. Preventive Services Task Force (USPSTF). (2001). Screening for Chlamydial Infection: Recommendations and Rationale. Article originally in *American Journal of Preventive Medicine 20*(3S), 90–94. Rockville, MD: Agency for Healthcare Research and Quality. Available at <www.ahrq.gov/clinic/ajpmsuppl/chlarr.htm>. [Accessed October 12, 2006].

U.S. Preventive Services Task Force (USPSTF). (2005). Screening for Gonorrhea: Recommendation Statement. AHRQ Publication No. 05-0579-A, May 2005. Rockville, MD: Agency for Healthcare Research and Quality. Available at <www.ahrq.gov/clinic/uspstf05/gonorrhea/gonrs.htm>. [Accessed October 12, 2006].

VanDevanter NL, Messeri P, Middlestadt SE, Bleakley A, Merzel CR, Hogben M, Ledsky R, Malotte CK, Cohall RM, Gift TL, St Lawrence JS. (2005). A community-based intervention designed to increase preventive health care seeking among adolescents: The Gonorrhea Community Action Project. *American Journal of Public Health, 2*(95), 331–337.

Wiesenfeld HC, Dennard-Hall K, Cook RL, Ashton M, Zamborsky T, Krohn MA. (2005). Knowledge about sexually transmitted diseases in women among primary care physicians. *Sexually Transmitted Diseases, 32*(11), 649–653.