

## **Improving Adolescent Condom Use: An Intervention Design**

### **Background**

Preventable sexually transmitted infection is endemic in modern society. This is particularly true in adolescent populations. While representing about a quarter of the sexually active population, those aged 15 to 24 contain nearly half of new cases of STI each year (Weinstock, Berman and Cates 2004). Many STIs are treatable, but others are not, and the health impacts of STIs can spread quickly through communities. Prevention of STIs is often much simpler and less costly, in monetary and emotional terms, than treatment or cure of infection. One of the most effective forms of preventing the spread of STIs is the use of condoms (CDC 2011).

Adolescents are at a unique point in sexual development. In the 15 to 19 year old age group, many adolescents have not yet engaged in sexual intercourse, but are learning concepts of sexuality and are exposed to a wide variety of attitudes and behaviors regarding safe and unsafe sexual practices. Research has also begun to show that practices at first sexual intercourse have a profound impact on future practices (Miller, Levin, Whitaker and Xu 1998, Shaffi, Stovel, Davis and Holmes 2004). Current rates of condom use in adolescents vary amongst socioeconomic levels, but tend to be near 60%, with some high-risk youth often using condoms less frequently or consistently (CDC). There is also concern that some adolescents do not consider non-vaginal intercourse as a method of STI transmission, and often fail to use any form of protection when engaging in such behaviors (Bruckner and Bearman 2005).

Unfortunately, in many parts of the country abstinence-only education is the only form of sexual health education that students receive. Social and religious factors play a large part in determining these policies, and are beyond the scope of this paper. The results of such policy are much simpler: Abstinence-only education may delay sexual debut, but has not prevented debut (Bruckner). A further problem with abstinence-only education is that once those students are sexually active, they engage in riskier behaviors than students who have had more comprehensive sexual health education (Bruckner). This paper proposes an intervention that will use condom availability programs along with peer-lead discussion of condom use, against a backdrop of responsible, comprehensive sexual health education to address the impact of unsafe sexual practices on rates of STI.

### **Intervention Considerations**

Self-efficacy of condom use is a very complex determinant of actual condom use. It consists of a variety of attitudes and beliefs including knowledge of condom use, ability to obtain condoms, sexual negotiation skills and beliefs about how using a condom will impact the experience of sexual intercourse. Many theoretical approaches have been used to assess and influence self-efficacy, such as State of Change Theory (SOC), the Health Belief Model (HBM), and the information-motivation-behavior (IMB) model. One consensus point across models is that increasing self-efficacy correlates to increased condom use.

Descriptive studies have found self-efficacy to be a predictor of condom use. In Belgium a study correlating self-efficacy of condom use to actual condom use found that increased self-efficacy significantly impacted actual use (Baele, Dusseldorp & Maes 2001). Similar results were also found in surveys of tenth grade American students in New York City and suburban Rockland (Kasen, Vaughan & Walter 1992).

School based interventions targeting self-efficacy have been used with positive results across many educational levels and demographic groups. Female college students have been given targeted interventions promoting condom use (Bryan, Aiken, & West 1996). Low-income urban adolescents were given community and small group education including condom use and sexual negotiation skills (Sikkema et al 2005). Inner-city youth were taught in classroom and peer led HIV education and prevention sessions, including condom use and sexual negotiation skills (Fisher, Fisher, Bryan & Misovich 2002). Female college students have also been given targeted SOC based educational interventions regarding condom use (Kiene and Barta 2006). All of these interventions showed short-term increases in condom use amongst participants, along with increased scores on surveys measuring self-efficacy.

Condom availability in schools is an unfortunately under-investigated topic with mixed results. Four studies directly investigating condom availability have been published, and of those only one was designed with the intent of empirically testing the effects of condom availability. However each study is valuable in the design of future interventions. All four studies followed the same general design. School districts were identified that were implementing condom availability programs of some form, and students were anonymously surveyed before and after condoms were made available in the schools or closely affiliated clinics. The important distinctions are in how condoms were made available.

Condom availability program effectiveness is in part reliant on associated educational programs. In New York, condoms were provided in school clinics and required students to identify themselves to receive condoms along side an STI educational program (Guttmacher et al 1997). Massachusetts enacted statewide condom availability with comprehensive sexual health education (Blake et al 2003). In Seattle condoms were dispensed via vending machines and in free baskets in schools (Kirby et al 1999). In Philadelphia condoms were provided without ID requirement alongside newly implemented STI education (Furstenburg, Geitz, Teitler and Weiss 1997). All studies found there was an increase in condom obtainment. Furstenberg, Blake and Guttmacher found that there was evidence showing increased condom use at last intercourse. Kirby found a decrease in condom use. A key difference between the Kirby study and other efforts was the presence of supporting educational programs along with the distribution of condoms.

The final intervention, conducted near Los Angeles, also provided condoms anonymously to students in schools with STI prevention curriculum, but ran into a different problem of intervention design (Schuster, Bell, Berry and Kanouse 1998). A small but vocal group of parents in the community objected to many parts of the program, including surveying students. This resulted in media controversy, school board meetings and a legal case that eventually ruled in favor of the researchers. The eventual findings were that although already sexually active students did not change their condom use habits significantly, those who began having sex during the study showed a significant increase in condom use.

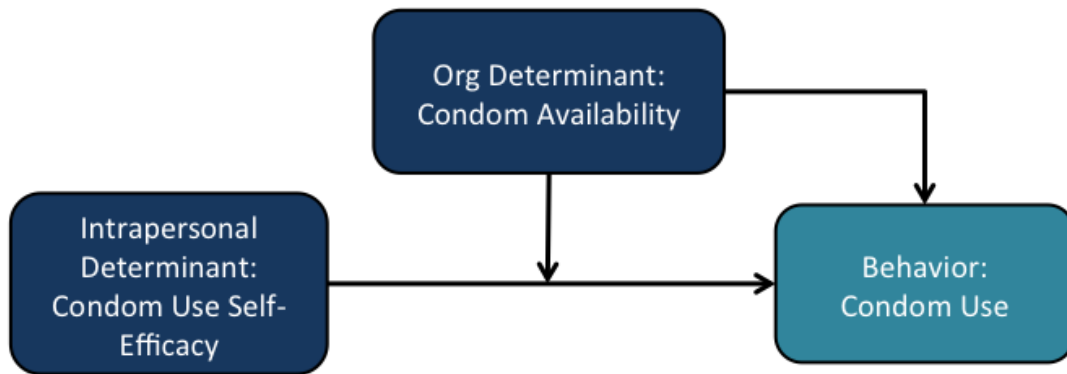
### **Intervention Design**

Based on these studies, a model explicitly increasing both self-efficacy and condom availability against a backdrop of STI education should increase condom use. As shown in the model below, the primary determinant of the model is self-efficacy. This is an intrapersonal determinant, as self-efficacy is a product of various personal beliefs and attitudes. Condom availability is both a determinant of condom use and a mediator of self-efficacy, as greater access to condom obtainment should increase already existing concepts of self-efficacy, via lowering barriers to acting upon high self-efficacy. For students who are already ready and willing to use condoms, condom availability removes barriers to

actualizing condom use. Availability is an organizational determinant in this model, as the intervention will be addressing availability in schools.

This model and intervention are drawn primarily from Social Cognitive Theory, as presented in Health Behavior and Health Education (Glanz, Rimer and Viswanath 2008). Condom use self-efficacy is one's belief (or lack thereof) in successfully using condoms. This fits neatly as a psychological determinant in SCT. This determinant will be addressed via the peer-led discussions, using social modeling and verbal persuasion constructs from SCT in order to build self-efficacy. Condom availability is an example of environmental change via facilitation. By providing a system to help encourage condom availability, barriers to condom use will be lowered.

**Conceptual Model**



The proposed intervention builds upon previous research by combining barrier free condom availability in high schools with peer-led workshops primarily targeting topics surrounding condom use. The target population is adolescent students of high school age (14 to 19), primarily focused on students entering high school. Results from the 2009 Youth Risk Behavior Survey show that amongst 9<sup>th</sup> grade students, 32% of students have already had sexual debut, and that by 12<sup>th</sup> grade 62% have become sexually active (Eaton et al 2009). Targeting younger students is ideal in order to increase self-efficacy before sexual debut.

The intervention will be delivered during the school day, at school. Recruitment of schools is a crucial step. Given previous challenges encountered by researchers in Los Angeles (Schuster), and the evidence that an educational program along with condom availability increases condom use (Furstenberg, Guttmacher), this intervention will

primarily look for school districts that currently practice comprehensive sexual health education, and that are willing to use passive consent for student participation in the intervention. Letters will be sent home with students along with the normal sexual health education notification and opt-out letter. By choosing a school system that is already comfortable with this design, the intervention itself should be more likely to receive firm school board support in the event that part of the community objects to the intervention. Ideally the school system will have multiple high schools so that an intervention and control arm can be implemented, or a second demographically similar school district will be found to use as a control. In all cases, a delayed start of the intervention in control schools will be implemented if the intervention continues past the first cycle.

Once a suitable school district has been located, an evaluation of the sexual health education program will occur. There are criteria that can be used to determine if a program will be generally effective at teaching a variety of sexual health practices (Kirby, Larism and Rolleri 2007). The goal of this evaluation, and any recommendations, is not to replace the current program at the schools, but to make sure that any program in place is addressing both condom use and other sexual health behaviors in more than a cursory way.

As the first part of the intervention, condoms will be made available through-out the school in semi-private locations. These locations include locker rooms, school nurse offices or health centers, various bathrooms, and other semi-private locations. Although previous interventions have shown improved condom use in situations where identification was needed (Guttmacher), other research has found such barriers lead to embarrassment for some adolescents, and may actually reduce self-efficacy regarding ability to obtain condoms (Blake et al 2006). This is at odds to the goals of the intervention.

By increasing condom availability this portion of the intervention directly address that organizational level determinant. By placing condoms directly in schools, the need to purchase condoms is removed. This in turn removes barriers such as cost, need for transportation to a store selling condoms, embarrassment of purchasing condoms, or refusal of stores to sell condom to the adolescents. Many stores lock condoms to prevent theft, requiring a lengthy and often obvious process to purchase condoms. Many clinics offer free condoms, but this situation also poses transportation and visibility concerns for adolescents. Having multiple discrete locations to obtain condoms in locations students already frequent provides the most direct method to ensure condom availability.

The second portion of the intervention will be focused on peer-led discussion groups. Although the literature has mixed results regarding the overall effectiveness of peer-led education in eventual condom use, recruitment methods of leaders are far from standardized (Kim and Free 2008). Some studies have shown positive results (Fisher 2002), and frameworks are being developed in order to ensure that methods used to recruit leaders will result in positive experiences for both organizations and adolescents being targeted (Cupples, Zukowski and Dierwechter 2010). The Male Advocates for Responsible Sexuality Program (MARS) provides a framework for recruiting and training successful peer educators. Based on social learning theory, this framework provides may be a first step in creating lasting results in peer led sexual health education.

The MARS program is intended to recruit college level educators, but the interview process can be scaled to the high school setting, and across gender. In the recruited schools requests for participation will be sent to the student body. Interested students will be able to apply to be a peer educator via submitting a short essay explaining why they want to be a peer educator and what, if any, beliefs they have about sexual health education. Promising students will be asked to come to a short interview and prepare a very short (less than five minute) presentation about a topic of sexual health of their choosing. This will allow intervention staff to assess in a candidate is appropriate. The number of candidates chosen will depend on both school size and number of suitable applicants.

Once educators have been recruited, intervention staff will work with the students to ensure that they are properly educated in topics such as safe sexual health practices and knowledge of STIs. Recruitment and education will ideally take place during the summer preceding the implementation of the school-wide intervention, allowing adequate time to ensure the peer educators are properly trained. Demographically, older high school students will be the ideal candidates, as they will be more socially credible on topics of relationships and sexual issues, and have more social capital in the eyes of younger students.

The school wide peer-led portion of the intervention will take place after normal sexual health education has begun. This way students will already ready be familiar with some topics likely to come up, and will prevent the peer educators from bearing responsibility of initiating other students' sexual health education. The format will be small group discussion at the classroom level, held either during a mandatory class (such as gym, civics, or other mandated freshman course) or during administrative period. This will

depend in part on the regulations, mandates and class schedules of the school district in question. The purpose of the sessions is to allow students to have open discussion about topics relating to sexual health that may be uncomfortable to have with adult educators, faculty, or other traditional sources of sexual health information. The sessions will be held once a month for the duration of the school year, so most students will receive 6 to eight 8 sessions in a school year lasting from September to April.

These sessions will address self-efficacy of condom use in multiple ways. First, by reinforcing what students are learning as part of a sexual health education program, factual knowledge of STIs, risky sexual behaviors and ways to mitigate risk during sexual encounters will be increased. Second, students will be able to explore ideas of responsible sexual practices in a social setting with peers. This serves to eliminate the effects of fear and embarrassment of speaking to adult figures, which may not be an option for some students. It will also move the topic of sexual from a mandatory classroom exercise to a valid part of interpersonal relationships. By encouraging student to think and speak to each other about their sexual practices, it will increase students' perceptions of their ability to communicate about sexual practices, even if they are not currently sexual active. By continuing to have sessions throughout the school year, the classroom and peer-lead learning will be continuous referenced, and not a one-time event. All of these factors will help internalize various concepts of condom use and sexual health for students, increasing knowledge, communication skill, and confidence in using those skill, thus building self-efficacy.

Below is a figure (*Overall Timeline*) showing the timeline of the intervention. Recruitment of schools will begin a year before the intervention is launched. During the school year and summer prior to implementation the school curriculum will be reviewed and student peer leaders will be recruited and trained. Once the intervention is launched, condoms will be distributed and sexual education classes will take place as usual. Peer-led sessions will begin shortly after the sexual health education program. Anonymous surveys will be administered at the beginning of sexual health education and at the end of each semester, providing baseline data and ongoing measurements of school-level impacts. At the end of the school year survey data will be reviewed, and the success of the intervention can be assessed both by the researchers and the school community. After assessment, the continuation, modification or termination of the intervention can be determined.

**Overall Timeline****Student Participation Timeline**

Condom use self-efficacy and actual use have been measured with success in many previous studies. Due to the issues surrounding confidentiality and the challenges of retaining such data, anonymous surveys will be used. The surveys will be based on the Youth Risk Behavior Survey System (YRBSS) and the NIMH Condom Use Self-Efficacy Scale (CUSES), presenting Likert scaled questions regarding sexual activity (Have you engaged in sexual intercourse ever? In the last month?), condom use (Have you ever used a condom? At last intercourse? With long term partners?), and concepts of condom use self-efficacy (How confident are that you can obtain condoms? Negotiate condom use? Know how to use a condom effectively?) will be given to students to complete during class. Questions will also be included regarding student use of various portions of the intervention (Did you obtain condoms at school? Did you use these condoms? Did peer discussion increase your confidence in using condoms?).

Using the format of the YRBSS, data can be compared both against control schools and against national YRBSS data if including control schools exceed the capabilities of the study. By including questions regarding the intervention program, impact on student self-efficacy and behavior can be measured to evaluate if the intervention was responsible for such changes. If the intervention is effective, it can be rolled out to the control schools. If evaluation of the survey results indicates a lack of impact, the intervention will need to be re-evaluated at that time.

To date, there have been many studies that examine individual determinants of adolescent condom use, and how those determinants can be addressed to improve outcomes. Few studies have tried to implement an intervention that addresses both individual and organizational determinants at the same time. As condom use is influenced by a broad set of influences including those discussed in this paper, and others that have not



been accounted for, it seems prudent to begin building on previous success and investigating more comprehensive strategies. This intervention aims to combine success found through influencing self-efficacy with the positive impact seen in lowering barriers to condom attainment.

Both of these approaches benefit from delivery in an environment that engages the target population in meaningful educational regarding STIs. Many school districts have shown a desire for effective sexual health education, thus setting the stage for going beyond classroom education. Accountable, evidenced-based interventions have shown each arm of this proposed intervention to be efficacious, so combining the tools and findings already developed should prove useful in combating STIs and improving health outcomes both for adolescents as they become sexual actors, and in their future lives by creating a foundation of responsible beliefs and attitudes in their sexual interactions.

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