

The Truth About Condoms

History of the Condom

The earliest known illustration of a man using a condom during sexual intercourse is painted on the wall of a cave in France. It is 12,000–15,000 years old (Parisot, 1987). We know that condoms have been used to protect against sexually transmitted infection since the 16th century and to prevent unwanted pregnancy since the 18th century (Himes, 1963). Since the 19th century, American moralists — who have misunderstood or denied its public health benefits — have attacked condom use (Brodie, 1994).

As a result, those who promoted an abstinence-until-marriage agenda stymied public health efforts toward increased condom use in the U.S for most of the 20th century. During World War I, for example, U.S. allies, including New Zealand, gave their troops condoms to prevent sexually transmitted infection. But social hygienists in the U.S. forced the American Expeditionary Forces to adopt a chastity campaign — they were opposed to any prophylactic prevention of sexually transmitted infection. Consequently, in 1919 alone, U.S. troops reported a yearly admissions rate of 766.55 per 1,000 for sexually transmitted infection (Brandt, 1985,).

In the last several years, certain anti-choice radicals have even distorted scientific fact in order to discourage condom use. Three myths propagated in this anti-condom misinformation campaign are particularly dangerous. The first myth purports that talking about condoms or giving people condoms will make them sexually promiscuous (Hartigan, 1997). The second claims that condoms cause AIDS because HIV allegedly passes through microscopic pores in the latex (A.L.L.). The third blames condoms for cervical cancer (Lerner, 1999;

Cantu & Farish, 1999). These myths are now so widespread that they are recited in Congress and have been incorporated into the sexuality education programs of more than a third of U.S. schools (Darroch et al., 2000; Lerner, 1999; Landry et al., 1999). But none of these myths are true.

As this fact sheet will make clear, the effectiveness of condoms against unintended pregnancy and sexually transmitted infection has long been established (see below). Further, information about and access to condoms clearly do not increase sexual activity among adolescents (Kirby, 1997; Schuster et al., 1998). One World Health Organization review of 19 studies found no evidence that sexuality education programs lead to earlier or increased sexual activity among teens (NCHSTP, 1996).

But easy access to condoms does encourage condom use among teens that are *already* sexually active (Blake et al., 2003). A study of more than 4,000 sexually active adolescents showed that condom use at sexual debut is associated with a twofold increased likelihood of subsequent condom use (Shafii et al., 2004). In fact, adolescents who use condoms the first time they have vaginal intercourse do not have more partners, are more likely to protect themselves and their partners, and are less likely to get an STI than adolescents who don't use condoms the first time they have vaginal intercourse (Shafii et al., 2007). And teens need protection — more than 60 percent of young women and men in the United States have had sexual intercourse by the age of 19 (Hebernick et al., 2010).

The truth about condoms is that they offer the best protection for the sexually active (Stone et al., 1999; CDC, 1998).

Nevertheless, scientifically based information about condoms that was available on government health websites has been either taken down or replaced with politically driven, censored pages that emphasize abstinence and have an exaggerated focus on the potential risks of condom use. For example, the Centers for Disease Control and Prevention (CDC) website expunged information showing that education about condoms does not result in increased or earlier sexual activity (Clymer, 2002).

Condom Use Is a National Public Health Goal

The U.S. Public Health Service has included increased condom use as an objective in its Healthy People 2000 and 2020 campaigns to promote health and prevent disease. The federal government plans to “increase the proportion of sexually active persons 15 to 19 years who use condoms to both effectively prevent pregnancy and provide barrier protection against disease at first intercourse and at last intercourse (DHHS, 2010).” **In fact, condom use among adolescent women and men has increased from 1991 to 2010, during which time 58.1 percent of women and 79.1 percent of men reported using condoms at last intercourse. And black and Latino women and men report more condom use than their white counterparts (Reece et al., 2010).**

In June 2000, a number of federal agencies including the CDC, National Institutes of Health (NIH), U.S. Food and Drug Administration (FDA), and the U.S. Agency for International Development (USAID) sponsored a workshop to look at the scientific evidence of the effectiveness of latex condom use to prevent the spread of STIs during vaginal intercourse. The report that resulted from this meeting confirmed that condoms are the best method for sexually active people to prevent STIs. It states that research shows condoms to be effective against pregnancy, HIV, and gonorrhea, and that while there is research that finds condoms to be effective against other STIs, more research needs to be conducted to more firmly establish condom efficacy (NIAID et al., 2001). **In fact, the CDC, which is the agency responsible for prevention messages, continues to promote condom use for general STI protection (CDC, 2004).**

Condom Effectiveness

Condoms are effective because they block contact with body fluids that cause pregnancy and sexually transmitted infection. Most reports of condom failure are the result of inconsistent or incorrect use, not breakage (Macaluso et al., 1999). A recent study of college students found that condom use errors were very common — 40 percent of the young men surveyed reported that, within the previous three months, they had not left space for ejaculate at the tip of a condom, and 15 percent had taken a condom off before completing intercourse (Crosby et al., 2002). In the U.S., the actual breakage rate is a low two per 100 condoms (CDC, 1998).

High failure rates in some studies occur because many people over-report contraceptive use to shift the responsibility for an unintended pregnancy to a “faulty” contraceptive. Such over-reporting artificially inflates failure rates (Trussell, 1998). Condom failure rates are also inflated because some young people have been shown to inaccurately report condom uses, use condoms incorrectly, and respond to survey questions with what they perceive to be socially desirable answers (Rose et al., 2009). In fact, most people who use condoms do not experience breakage or slippage. Most condom failures occur among a minority of users because they are less experienced and/or less careful about using condoms than more successful users (Steiner et al., 1993, Steiner et al., 1994).

Condoms as Birth Control

Condoms are an effective, inexpensive form of birth control. Of 100 women whose partners use condoms inconsistently or imperfectly, 18 will become pregnant in the first year of use. Only two will become pregnant if condoms are used perfectly (Trussell, 2011). Unlike many other forms of birth control, condoms also protect against sexually transmitted infection. Additional advantages of condoms as birth control include low cost, easy access, simple disposal, minimal side effects, and longer-lasting sex play. Using condoms can also enhance sexual pleasure by reducing anxieties about the risk of infection and pregnancy (Warner & Hatcher, 1998).

Condoms and Fertility

Condoms can help protect fertility by preventing transmission of sexually transmitted infections, such as chlamydia and gonorrhea, that cause infertility. Women whose partners use condoms are at much lower risk of hospitalization for pelvic inflammatory disease — a condition that causes infertility — than those whose partners do not (Kelaghan et al., 1982). And women whose partners use condoms are at 30 percent less risk of infertility due to sexually transmitted infection (Cramer et al., 1987).

Condoms and Sexually Transmitted Infection

Condoms offer effective protection against most serious sexually transmitted infections by preventing the exchange of body fluids (Cates & Stone, 1992; CDC, 1998; Stone et al., 1999). Such fluids — semen, genital discharge, or infectious secretions — are the primary routes of transmission (Stone et al., 1999). While latex condoms may not completely prevent skin-to-skin contact, they offer the best protection possible because the glans and shaft of the penis are the major portals of exit and entry of sexually transmitted infections (Stone et al., 1999). (In order to be effective, condoms must be used consistently and correctly, put on prior to genital contact, and used throughout contact [Cates & Stone, 1992; CDC, 1998]).

Condoms and Bacterial Infections

Condoms offer good protection against sexually transmitted bacterial infection — chlamydia, gonorrhea, trichomoniasis, and syphilis (Stone et al., 1999; Judson et al., 1989). During the 1980s, genital chlamydia became the most prevalent bacterial STI in the U.S., and by 1996 there were an estimated three million new cases — this made chlamydia the most frequently reported infectious disease in the country (KFF, 1998). A 2006 review of the literature on condom use to prevent transmission of chlamydia and gonorrhea found that most studies associated condom use with demonstrable risk reduction (Warner et al., 2006). Increased condom use will help reduce the incidence of all these infections (Stone et al., 1999; Cates & Stone, 1992).

Condoms and Viral Infections

Condoms are effective against viral infections such as HIV, hepatitis B, cytomegalovirus, and herpes simplex virus 2, which are transmitted by semen,

urethral fluids, and genital sores (CDC, 2004; Judson et al., 1989; Cates & Stone, 1992).

Herpes

Herpes simplex virus (HSV) type 2 causes genital herpes. Studies have shown that opposite sex couples who used condoms during one out of four acts of intercourse reduced the risk of infection with HSV 2 for the woman — but not the man — by 92 percent. Infection was even rarer among women and men who used condoms during every act of intercourse (Holmes et al., 2004)

The Centers for Disease Control and Prevention has long recommend condom usage as a way to reduce the risk of herpes infections (CDC, 1998). In fact, using condoms for every act of intercourse significantly reduces the risk of infection (Wald, 2005).

HIV

Given the serious consequences of HIV infection, much of the research about condom efficacy has focused on HIV transmission. **The condom is recognized as a highly effective barrier against HIV infection (CDC, 2004).**

Condom-use opponents, however, have manipulated the findings of flawed laboratory tests to create public doubt about the condom's effectiveness against HIV. For example, one study erroneously concluded that latex condoms leak HIV virus even though it used particles that were 100 million times smaller than the HIV particles found in semen (Stone et al., 1999). In fact, the risk of HIV transmission with a condom is reduced — as much as 10,000-fold (Carey et al., 1992; Cavalieri d'Oro et al., 1994; Weller, 1993).

In a study of couples in which one partner was HIV positive, only one case of infection (two percent) occurred among those who

remained sexually active and used condoms consistently and correctly.

In contrast, the incidence of HIV infection was 14 percent with inconsistent use (Deschamps et al., 1996). A similar study that followed couples for an average of 20 months found there were no new cases of infection among couples who used condoms consistently (de Vincenzi, 1994). Another study found that among a group of couples who used condoms consistently, two percent of the uninfected partners contracted HIV over the course of the two-year study. This contrasts with 12 percent of partners who reported infected in couples that reported inconsistent or no condom use (Saracco et al., 1993). A meta-analysis of 25 studies on HIV transmission and condoms found an average efficacy rate of 87 percent against HIV infection. However, efficacy rates can range from 60 percent to 96 percent (Davis & Weller, 1999).

HPV

Condoms provide some protection against the human papilloma viruses (HPV) that infect the general genital area (CDC, 2004). The Centers for Disease Control and Prevention recommend condom usage as a way to reduce the risk of HPV infections (CDC, 1998). Since HPV and herpes viruses 'shed' beyond the covered area, however, condoms do not provide as complete protection as they do for other pathogens, but two recent Dutch studies have found that condom use has been shown to clear HPV infections in women as well as the abnormal cell growths they cause on the cervix and penis (Hogewoning et al., 2003; Bleeker et al., 2003).

HPV and Cervical Cancer

Few HPV infections lead to cervical cancer. Of at least 100 types of HPV, only a handful are

associated with cervical cancer (Kiviat et al., 1999; Koutsky & Kiviat, 1999). Most HPV infections are short-lived, and many women appear to develop immunity to different HPV infections. Nearly a third of women may recover from the infection within six months. Persistent infection and reinfection seems to be the higher risk factor for cervical cancer (Ho, et al., 1998).

The claims of condom use opponents regarding HPV are false and alarmist. Condom use cannot be blamed for the high prevalence of HPV or cervical cancer among women in the U.S. In fact, studies have shown an association between condom use and a reduced risk of HPV-associated diseases, including cervical cancer (CDC, 2004). As stated above, condom use has been shown to clear HPV infections and the abnormal cell growth they cause on the cervix and on the penis (Bleeker et al., 2003; Hogewoning et al., 2003). While condoms may not eliminate the risk of transmitting the HPVs that cause cancer, the CDC recommends condoms for risk reduction (CDC, 1998).

Failure to use condoms has been shown to be among the most significant risk factors for pre-cancerous conditions related to certain types of HPV (Wang & Lin, 1996).

Clearly, despite the claims of abstinence-until-marriage proponents, condoms offer the best risk reduction for sexually transmitted infections among sexually active women and men. They also provide significant protection against unintended pregnancy.

Double Bagging

Many myths about condoms are not political. One popular myth is that using more than one condom at a time — double bagging — will cause condoms to break.

Even popular wisdom among health educators has it that double bagging — using more than one condom at a time — is not more effective than using just one, and doing so may cause condom breakage. Wikipedia, for example, asserts that double bagging breaks condoms (Wikipedia, 2009). Many online health information resources, including About.com, AIDS.org, and the Texas Department of State Health Services, make the same assertion (About.com, 2008; AIDS.org, 2008; TDSHS, 2008).

Online health information centers that make this

claim offer no scientific evidence for their claims. Wikipedia offers two citations to support the assertion, but they are both two popular health information websites: Go Ask Alice and the New York University Student Health Center (Wikipedia, 2009). Neither offer citations for the claims they make (Go Ask Alice, 2009; NYUSHC, 2009). The U.S. Centers for Disease Control and Prevention is silent on the subject (CDC, 2009). So is the current (19th) edition of *Contraceptive Technology* (Hatcher et al., 2007). Interestingly, however, the 17th and 18th editions both suggested using two condoms at a time to increase effectiveness (Hatcher et al., 1998; Hatcher et al., 2004).

Five scientific studies have been published in peer-reviewed journals about multiple condom use. Three demonstrate that double bagging is not uncommon among gay men in the U.S. (Wolitski et al., 2001) and sex workers in Cambodia (Morineau et al., 2007) and Nevada (Albert et al., 1995). Three also showed that double bagging significantly reduced the risk of condom breakage (Albert, et al, 1995; Ruggao et al., February 1997 and October 1997).

Only one of the five studies commented on the effectiveness of double bagging. It concluded that "Multiple condom use significantly decreased the risk of potential exposure to HIV/sexually transmitted disease (STD) by decreasing the probability of exposure breakage ... from 1.8 percent to 0.2 percent (Ruggao et al., October 1997)."

And only one of these studies reiterated the popular wisdom that double bagging causes condom breakage. Its authors offer three citations for their caution against double bagging. Two are websites mounted by health educators and students that can no longer be found with the URLs that the authors provide. The third is the NYU Student Health Center (Morineau et al., 2007). (See above.)

It seems that there is no evidence-based information to support advising *against* double bagging. On the other hand, the evidence to support double bagging is limited, but positive. It may be best to advise that if double bagging increases a person's sense of comfort and security, there is no harm in using more than one condom, and there may be benefits. One recent review of this evidence even suggests that "When clinicians see women and men who have experienced multiple breaks or slippage, it would be wise to encourage them to use two condoms (Contraceptive Technology Update, 2011)."

Cited References

- About.com. (2008). Does using two condoms provide better pregnancy protection than just one? <http://contraception.about.com/od/malecondom/ff/twocondoms.htm> accessed December 30, 2008.
- AIDS.org. (2008). Condoms. www.aids.org/factSheets/153-Condoms.html.
- Albert, Alexa E., et al. (1995). Condom Use among Female Commercial Sex Workers in Nevada's Legal Brothels. *American Journal of Public Health*, 85(11), 1514–20.
- A.L.L. — American Life League. (No date, accessed 2000, January 27). *Birth Control* [Online]. <http://www.all.org/issues/se04.htm>.
- Blake, Susan M., et al. (2003). "Condom Availability Programs in Massachusetts High Schools: Relationships with Condom Use and Sexual Behavior." *American Journal of Public Health*, 93(6), 955–962.
- Bleeker, Maaikje C.G., et al. (2003). "Condom Use Promotes Regression of Human Papillomavirus-Associated Penile Lesions in Male Sexual Partners of Women with Cervical Intraepithelial Neoplasia." *International Journal of Cancer*, 107, 804–810.
- Brandt, Allan M. (1985). *No Magic Bullet: A Social History of Venereal Disease in the United States Since 1880*. New York: Oxford University Press.
- Brodie, Janet F. (1994). *Contraception and Abortion in Nineteenth Century America*. Ithaca, New York: Cornell University Press.
- Cantu, Yvette C. & Heather E. Farish. (1999, accessed 2000, January 27) *The Human Papillomavirus (HPV) Epidemic: Condoms Don't Work* [Online]. <http://www.frc.org/insight/is99flab.html>.
- Carey, Ronald F., et al. (1992). "Effectiveness of Latex Condoms as a Barrier to Human Immunodeficiency Virus-Sized Particles under Conditions of Simulated Use." *Sexually Transmitted Diseases*, 19(4), 230–234.
- Cates, Willard & Katherine M. Stone. (1992). "Family Planning, Sexually Transmitted Diseases and Contraceptive Choice: A Literature Update — Part I." *Family Planning Perspectives*, 24(2), 75–84.
- Cavaliere d'Oro, Luca, et al. (1994). "Barrier Methods of Contraception, Spermicides, and Sexually Transmitted Diseases: A Review." *Genitourinary Medicine*, 70(6), 410–417.
- CDC — Centers for Disease Control and Prevention. (1998, January 23). "1998 Guidelines for the Treatment of Sexually Transmitted Diseases." *Morbidity and Mortality Weekly Report*, 47(RR-1), 1–116.
- _____. (2004, accessed 2004, June 7). *Fact Sheet for Public Health Personnel: Male Latex Condoms and Sexually Transmitted Diseases*. [Online]. <http://www.cdc.gov/nchstp/od/latex.htm>
- _____. U.S. Centers for Disease Control and Prevention (2009). Male Latex Condoms and Sexually Transmitted Diseases. <http://www.cdc.gov/condomeffectiveness/brief.html#Consistent> accessed January 12, 2009.
- Clymer, Adam. (2002, December 27). "U.S. Revises Sex Information, and a Fight Goes On." *The New York Times*, p. 17.
- Contraceptive Technology Update*. (2011). What's the evidence for using two condoms? January, 8–9.
- Cramer, Daniel W., et al. (1987). "The Relationship of Tubal Infertility to Barrier Method and Oral Contraceptive Use." *JAMA*, 257(18), 2446–2450.
- Crosby, Richard, et al. (2002). "Condom Use Errors and Problems Among College Men." *Sexually Transmitted Diseases*, 29(9), 552–557.
- Darroch, Jacqueline E., et al. (2000). "Changing Emphases in Sexuality Education in U.S. Public Secondary Schools,

- 1988-1999." *Family Planning Perspectives*, 32(5), 204–211& 265.
- Davis, Karen R. & Susan C. Weller. (1999). "The Effectiveness of Condoms in Reducing Heterosexual Transmission of HIV." *Family Planning Perspectives*, 31(6), 272–279.
- Deschamps, Marie-Marcelle, et al. (1996). "Heterosexual Transmission of HIV in Haiti." *Annals of Internal Medicine*, 125(4), 324–330.
- de Vincenzi, Isabelle. (1994). "A Longitudinal Study of Human Immunodeficiency Virus Transmission by Heterosexual Partners." *New England Journal of Medicine*, 331(6), 341–346.
- DHHS — U.S. Department of Health and Human Services. (2010). Family Planning Objectives. Healthy People 2020, [Online]
www.healthypeople.gov/2020/topicsobjectives2020/objectiveslist.aspx?topicid=13 accessed April 26, 2011.
- Go Ask Alice. (2009). Are two condoms better than one? www.goaskalice.columbia.edu/1139.html, accessed January 9, 2009.
- Hartigan, John D. (1997, accessed 2000, January 27). *The Disastrous Results of Condom Distribution Programs* [Online].
<http://www.frc.org/infocus/if97k1ab.html>.
- Hatcher, Robert A., et al. (2007). *Contraceptive Technology — Nineteenth Revised Edition*. New York: Ardent Media.
- _____. (2004). *Contraceptive Technology — Eighteenth Revised Edition*. New York: Ardent Media.
- _____. (1998). *Contraceptive Technology — Seventeenth Revised Edition*. New York: Ardent Media.
- Hebernick, Debby, et al. (2010). Sexual Behavior in the United States: Results from a National Probability Sample of Men and Women Ages 14–94. *Journal of Sexual Medicine*, 7(supplement 5), 255–265.
- Himes, Norman E. (1963). *Medical History of Contraception*. New York: Gamut Press, Inc.
- Ho, Gloria Y.F., et al. (1998). "Natural History of Cervicovaginal Papillomavirus Infection in Young Women." *New England Journal of Medicine*, 338(7), 423–428.
- Hogewoning, Cornelis J.A., et al. (2003). "Condom Use Promotes Regression of Cervical Intraepithelial Neoplasia and Clearance of Human Papillomavirus: A Randomized Clinical Trial." *International Journal of Cancer*, 107, 811–816.
- Holmes, King, et al. (2004). Effectiveness of Condoms in preventing sexually transmitted infections. *Bulletin of the World Health Organization*, 82(6), 454–64.
- Judson, Franklyn N., et al. (1989). "In Vitro Evaluations of Condoms with and Without Nonoxynol 9 as Physical and Chemical Barriers Against Chlamydia Trachomatis, Herpes Simplex Virus Type 2, and Human Immunodeficiency Virus." *Sexually Transmitted Diseases*, 16(2), 51–56.
- Kelaghan, Joseph, et al. (1982). "Barrier-Method Contraceptives and Pelvic Inflammatory Disease." *JAMA*, 248(2), 184–187.
- KFF — Kaiser Family Foundation. (1998). *Sexually Transmitted Diseases in America: How Many Cases and at What Cost?* Menlo Park, CA: Kaiser Family Foundation and American Social Health Association.
- Kirby, Douglas. (1997). *No Easy Answers: Research Findings on Programs to Prevent Teen Pregnancy*. Washington, DC: The National Campaign to Prevent Teen Pregnancy.
- Kiviat, Nancy, et al. (1999). "Cervical Neoplasia and Other STD-Related Genital Tract Neoplasias." In King K. Holmes et al., eds., *Sexually Transmitted Diseases*, 3rd edition. New York: McGraw-Hill.
- Koutsky, Laura A. & Nancy B. Kiviat. (1999). "Genital Human Papillomavirus." In King K. Holmes et al., eds., *Sexually Transmitted Diseases*, 3rd edition. New York: McGraw-Hill.
- Landry, David J., et al. (1999). "Abstinence Promotion and the Provision of Information About Contraception in Public School District Sexuality Education Policies." *Family Planning Perspectives*, 31(6), 280–286.
- Lerner, Sharon. (1999, November 9). "Condomnation." *The Village Voice*, p. 26.
- Macalusco, Maurizio, et al. (1999). "Mechanical Failure of the Latex Condom in a Cohort of Women at High STD Risk." *Sexually Transmitted Diseases*, 26(8), 450–458.
- Morineau, Guy, et al. (2007). Simultaneous Use of Multiple Condoms among Male Cambodian Military Personnel Visiting Female Sex Workers. *Sexually Transmitted Diseases*, 34(10), 808–12.
- NCHSTP — National Center for HIV, STD, & TB Prevention. (1996, accessed 1999, December 2). Condoms and Their Use in Preventing HIV Infection and Other STDs [Online]. http://www.cdc.gov/nchstp/hiv_aids/pubs/facts/condoms.pdf.
- NIAID — National Institute of Allergy and Infectious Diseases, et al. (2001, accessed 2003, January 16). *Workshop Summary: Scientific Evidence on Condom Effectiveness for Sexually Transmitted Disease (STD) Prevention*. [Online]. <http://www.niaid.nih.gov/dmid/stds/condomreport.pdf>
- NYUSHC — New York University Student Health Center. (2009) Does using two condoms provide more protection than using just one condom? www.nyu.edu/shc/promotion/condoms.dental.dams.html, accessed January 9, 2009.
- Parisot, Jeannette. (1987). *Johnny Come Lately: A Short History of the Condom*. Translated and enlarged by Bill McCann. London: Journeyman.
- Reece, Michael, et al. (2010). Condom Use Rates in a National Probability Sample of Males and Females Ages 14–94 in the United States. *Journal of Sexual Medicine*, 7(Supplement 5) 266–276).
- Rose, Eve, et al. (2009). The Validity of Tennesse' and Young Adults' Self-Reported Condom Use. *Archives of Pediatric Adolescent Medicine*, 163(1), 61–43.
- Rugpao, Sugwal, et al. (February, 1997). Multiple Condom Use and Decreased Condom Breakage and Shippage in Thailand. *Journal of Acquired Immune Deficiency Syndrome and Human Retrovirology*, 14(2), 169–173.
- _____. (October, 1997). Multiple Condom Use in Commercial Sex in Lamphun Province, Thailand: A Community-Generated STD/HIV Prevention Strategy. *Sexually Transmitted Diseases*
- Saracco, A., et al. (1993). "Man-to-Woman Sexual Transmission of HIV: Longitudinal Study of 343 Steady Partners of Infected Men." *Journal of Acquired Immune Deficiency Syndrome*, 6(5), 497–502.
- Schuster, Mark A., et al. (1998). "Impact of a High School Condom Availability Program on Sexual Attitudes and Behaviors." *Family Planning Perspectives*, 30(2), 67–72 & 88.
- Shafii, Taraneh, et al. (2004). "Is Condom Use Habit Forming?" *Sexually Transmitted Diseases*, 31(6), 366–372.
- _____. (2007). Association Between Condom Use at Sexual Debut and Subsequent Sexual Trajectories: A Longitudinal Study Using Biomarkers. *American Journal of Public Health*, 97(6), 1090–1095.
- Steiner, Markus, et al. (1993). Can Condom Users Likely to Experience Condom Failure Be Identified? *Family Planning Perspectives*, 25(5), 220–226.
- _____. (1994). Condom Breakage and Slippage Rates Among Study Participants in Eight Countries. *International Family Planning Perspectives*, 20(2), 55–58
- Stone, Katherine M., et al. (1999). "Barrier Methods for the Prevention of Sexually Transmitted Diseases." In King K. Holmes et al., eds., *Sexually Transmitted Diseases*, 3rd edition. New York: McGraw-Hill.
- TDSHS — Texas Department of State Health Services. (2004) STDs and Condoms Fact Sheet.

- <http://www.dshs.state.tx.us/hivstd/info/edmat/condoms.pdf>, accessed December 30, 2008.
- Trussell, James. (1998). Contraceptive Efficacy. In Robert A. Hatcher et al., eds., *Contraceptive Technology*, 17th edition. New York: Ardent Media, 779–801.
- _____. (2011). "Contraceptive Failure in the United States." *Contraception*, 83, 397–404. Trussell, James, et al. (2004). "Contraceptive Efficacy." in Robert A. Hatcher et al., eds. *Contraceptive Technology*, 18th edition. New York: Ardent Media, 773–793.
- Wald, Anna, et al. (2005). The Relationship Between Condom Use and Herpes Simplex Virus Acquisition. *Annals of Internal Medicine*, 143(10), 707–714.
- Wang, Pair Dong & Ruey S. Lin. (1996). "Risk Factors for Cervical Intraepithelial Neoplasia in Taiwan." *Gynecological Oncology*, 62(1), 10–18.
- Warner, D. Lee & Robert A. Hatcher. (1998). "Male Condoms." In Robert A. Hatcher et al., eds., *Contraceptive Technology*, 17th edition. New York: Ardent Media.
- Warner, Lee et al, (2006). Condom Use and Risk of Gonorrhea and Chlamydia: A Systematic Review of Design and Measurement Factors Assessed in Epidemiologic Studies. *Sexually Transmitted Disease*, 33(1), 36–51.
- Weller, Susan C. (1993). "A Meta-Analysis of Condom Effectiveness in Reducing Sexually Transmitted HIV." *Social Science and Medicine*, 36(12), 1635–1644.
- Wikipedia. (2009) Condom. <http://en.wikipedia.org/wiki/Condom>, accessed January 9, 2009.
- Wolitski, Richard J. et al. (2001). Awareness and Use of Unprotected Barrier Methods by HIV-Seropositive Gay and Bisexual Men. *AIDS Education and Prevention*, 13(4), 291–301.
- URLs offered by authors that no longer function
- <http://66.102.7.104/search/q=cache:wncy1X0LfP8J:www.mnschoolhealth.com/article/pubs/030528163649-356891/050223151226-655844/cdocumentsandsetting.pdf+double-bagging+condom+breakage&hl=en&ct=clnk&cd=95>
- <http://studenthealth.sa.ucsb.edu/HealthEducation/SexualHealth/SaferSexSexualHealthandSTIs.asp>

© 2011 Planned Parenthood Federation of America, Inc. All rights reserved. Planned Parenthood®, PPFA®, and the logo of "nested Ps" are registered service marks of PPFA.

Media Contacts — New York, NY: 212-261-4433