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BMJ 2008;336:185
doi:10.1136/bmj.39402.527766.AD

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Are condoms the answer to rising rates of non-HIV sexually transmitted infection?

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YES For people who are sexually active, condoms remain our best solution to reducing risks of acquiring sexually transmitted infections (if uninfected) or transmitting these infections (if infected). Strong evidence from laboratory studies and mounting clinical studies shows that condoms effectively reduce the risk of transmission. In addition, for specific populations, increased levels of condom use have been associated with decreases in reported sexually transmitted infections.

Condoms work

Condoms protect the wearer and his partner from infection by covering the penile glans and shaft, which are the major portals of entry and exit of sexually transmitted pathogens. Laboratory studies indicate that latex condoms are an effective physical barrier against passage of even the smallest sexually transmitted pathogens.¹

When placed on the penis before any genital contact and used throughout intercourse, the condom prevents direct contact with

We need to focus on ensuring consistent and correct condom use rather than denigrating condoms as being less than perfect

semen; genital lesions and subclinical viral shedding on the glans and shaft of the penis; and penile, vaginal, or anal discharges. Thus, condoms reduce the risk of infections that are transmitted primarily to or from the penile urethra such as HIV, gonorrhoea, chlamydia, trichomoniasis, and hepatitis B. Condoms also reduce the risk of infections that are transmitted primarily through skin or mucosal surfaces when these areas are covered by the condom, such as genital herpes, syphilis, chancroid, and human papillomavirus infection.

Although clinical studies have shown inconsistent protective effects for most sexually transmitted infections other than HIV,² much of this can be attributed to limitations in study design. Limitations in measurement of self reported condom use and exposure to infected partners complicate interpretation of results.³ Moreover, the levels of protection from condoms are likely to differ between

infections because of variations in their routes of transmission, infectivity, and prevalence.

Despite these limitations, a recent systematic literature review of 45 published studies of condom use and gonorrhoea and chlamydia provides strong evidence that condoms reduce risk in both men and women.³ Many of these studies did not measure critical factors such as exposure to infected partners, consistent and correct condom use, or incident infection. The observed protective effects are therefore likely to be underestimates. When one of the 45 studies was adjusted for infection status by using a case crossover analysis, the protective effect of condoms increased dramatically.⁴ Recent well designed studies have also shown consistent and correct use of condoms can reduce herpes simplex virus⁵ and cervical human papillomavirus infection.⁶

One problem with relying on condoms to halt the rising rates of infection is that the promotion of condoms remains controversial in many countries, including the United States. The data are clear, however. Other than abstinence, which is difficult to achieve, condoms are the most effective means of stopping the spread of sexually transmitted infections. We need to focus on ensuring consistent and correct condom use rather than denigrating condoms as being less than perfect.

Two recent reviews,^{7 8} show that behavioural interventions featuring condom promotion are associated with increases in reported condom use and, to a lesser extent, decreases in incidence of sexually transmitted infection. One theoretical concern is that condom promotion could lead to risk compensation—men who use condoms may feel safer and consequently engage in more frequent sex or sex with more partners, thus increasing the risk of transmission. The most recent review of 174 condom related prevention approaches, however, concluded that sexual risk reduction interventions do not increase unsafe sexual behaviour.⁹ In addition, a recent systematic review showed adding condom promotion to interventions focusing on abstinence does not undermine the abstinence message.¹⁰ Despite this reassurance, we must continue to be vigilant when promoting the use of condoms to



avoid giving users a false sense of security; we should refer, for example, to safer sex rather than safe sex.

Condoms in context

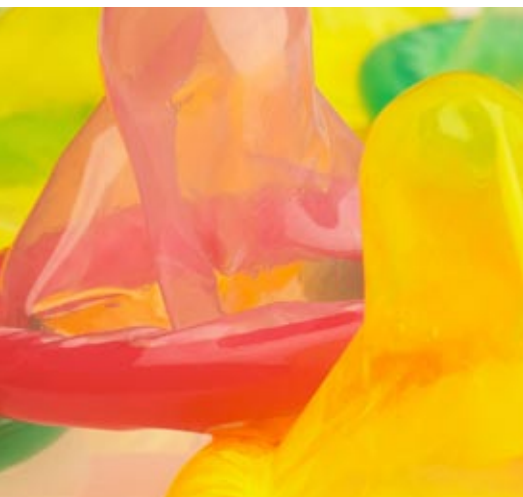
Like any prevention tool (such as seat belts or airbags) condoms are not 100% effective. Preventing sexually transmitted infection requires incremental, partially effective steps to produce collectively effective (but not perfect) prevention programmes.¹¹ Controlling the spread of infection will require different, mutually reinforcing techniques.

Accurate messages about condoms must build on a wide range of risk avoidance and risk reduction approaches. These approaches include delayed initiation of sexual intercourse, mutual faithfulness, and selection of low risk partners. Together with condoms, these reinforcing epidemiologic truisms have been labelled both as an ABC strategy: abstinence, be faithful to one partner, and use condoms.¹³ Condoms have a pivotal role in this larger armamentarium of strategies.

What does this mean for clinicians who counsel patients about sexual health? Firstly, people who abstain from intercourse or who are uninfected and mutually monogamous eliminate the risk of infection entirely. Secondly, people who choose to be sexually active can be reassured that condom use reduces the risk of most infections. Thirdly, condoms, like any other prevention tool, work only when used properly—consistent and correct use is essential for optimal risk reduction.

Competing interests: None declared.

Consistent condom use can reduce the spread of HIV, and **Markus Steiner** and **Willard Cates** believe condoms are the answer to other sexually transmitted infections. But **Stephen Genuis** argues that a more comprehensive approach is needed



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NO Clinical considerations surrounding the science of sexuality and reproductive health have routinely been hijacked by philosophical perspectives, economic interests, religious bias, and sexual ideology. Rather than dialogue about evidence based outcomes and credible health policy, most talk about prevention of sexually transmitted infections involves debate over mutually exclusive perspectives on sexual morality.

Proponents of approaches encouraging safe sex (or safer sex) are accused of corrupting youth with amoral values, and opponents are perceived as zealots who disregard scientific fact in imposing their fanaticism on society. We need to look beyond vested interests to focus on clinical science and public health evidence.

A fundamental tenet of medicine is adherence to scientific fact and experiential evidence to develop treatments and programmes that maximise and sustain health. That evidence shows that effective population control of non-HIV sexually transmitted infections requires more than condom focused approaches.

Scope of protection

Firstly, condoms cannot be the definitive answer to sexually transmitted infection because they provide insufficient protection against transmission of many common diseases. “Skin to skin” and “skin to sore” infections

such as human papillomavirus, herpes simplex virus, syphilis, lymphogranuloma venereum, or chancroid often transmit despite barrier protection.^{1 2} Although condoms prevent contact between the skin of the penis and the vaginal mucosa, intercourse generally involves skin to skin contact in the external genital area; the condom gives limited protection against pathogens found throughout the external genital tract.

Clinical and subclinical lesions on the mons pubis or on the woman’s vulva or the male scrotum, for example, are not covered and readily transmit despite condom use. The most common sexually transmitted pathogens, human papillomavirus and herpes simplex virus, are often dispersed on infected genitalia and transmit through skin to skin contact. As the sequelae of these common infections may include various cancers,^{2 3} chronic sexual dysfunction,^{2 4} as well as vertical transmission,^{2 5} contracting such organisms is not inconsequential.

Practical effectiveness

The main problem with condoms is that average people, particularly aroused youth, do not use them consistently, regardless of knowledge or education.^{2 6}

Epidemiological research repeatedly shows that condom familiarity and risk awareness do not result in sustained safer sex choices in real life.^{2 6 7} A recent study found that less than 8% of couples discordant for herpes used condoms for each sex act, despite ongoing counselling.⁷ Even among stable, adult couples who were HIV discordant and received extensive ongoing counselling about HIV risk and condom use, only 48.4% used condoms consistently.⁸

The relentless rise of sexually transmitted infection in the face of unprecedented education about and promotion of condoms is testament to the lack of success of this approach. In numerous large studies, concerted efforts to promote use of condoms has consistently failed to control rates of sexually transmitted infection—even in countries with advanced sex education programmes such as Canada, Sweden, and Switzerland.¹⁰ In Alberta, rates of chlamydia and gonorrhoea have

tripled since 1998 despite ubiquitous “safer sex” education.

Reports of diminished rates of sexually transmitted infection as a result of widespread condom use in countries such as Thailand and Cambodia are reinforcing the focus on condoms as the primary strategy. Careful scrutiny of the data, however, suggests that changes in sexual behaviour (fewer partners, less casual sex, and less use of sex workers) after mass educational campaigns rather than widespread condom use by ordinary citizens was instrumental in reducing infection rates.^{2 11}

Tackling the root cause

The World Health Organization estimates that two thirds of sexually transmitted infections worldwide occur in teenagers and young adults.¹² Extensive research shows that, not unlike other high risk behaviour in young people, risky sexual activity is often an expression of non-sexual need and associated with fundamental problems and difficulties.^{2 13}

Promoting condoms as “the” answer fails to tackle the underlying social and emotional needs of young people, who are often trapped in high risk sexual behaviour as a consequence of difficult life circumstances. Innumerable adolescents saturated with condom focused sex education fail to have their fundamental human needs met and end up contracting sexually transmitted infections.

Political correctness and ideological interests need to be usurped by sound science. After repeated failure, the altar of safe sex needs to be dismantled in favour of credible public health policy. Although factual information about barrier protection should be included in any discussion of sexually transmitted infections, narrow condom focused initiatives should be replaced with comprehensive programmes discussed in the medical literature that have evidence based success at reducing rates of infection.²

Competing interests: None declared.

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