

# Condom Use and High-Risk Sexual Acts in Adult Films: A Comparison of Heterosexual and Homosexual Films

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Unprotected sex in adult films is an occupational health risk for performers. These sexual acts can expose performers to sexually transmitted diseases (STDs) such as HIV, hepatitis, human papillomavirus, herpes simplex virus, chlamydia, and gonorrhea. The heterosexual adult film industry uses a testing program to address prevention of HIV and other STDs; the level of condom use in the industry is unknown.<sup>1</sup> Adult Industry Medical was founded to screen performers monthly for HIV with a DNA polymerase chain reaction test; it now also screens for gonorrhea and chlamydia. Because testing is voluntary, the degree to which performers are tested and their tests are checked before performances is unknown. In addition, because these tests produce negative results for approximately 2 weeks after HIV exposure, a negative result does not preclude HIV transmission.<sup>2</sup> Although performers are tested every 30 days, they may be exposed to HIV or other STDs outside the workplace or between tests. An HIV outbreak occurred when 3 performers who were compliant with monthly screening contracted HIV in April of 2004.<sup>3</sup> A male performer who had tested HIV negative only 3 days earlier went on to infect 3 female performers.

Occupational Safety and Health Administration (OSHA) regulations apply to all workers who are considered employees,<sup>4</sup> and the California Occupational Safety and Health Act was enacted in 1973 to ensure safe and healthy working conditions for all Californians.<sup>5</sup> After the 2004 HIV outbreak, California OSHA issued a model exposure control plan specific to the adult film industry to protect performers from acquiring STDs.<sup>6</sup> This plan provides methods and filmmaking techniques that protect workers from coming into contact with blood, semen, or vaginal fluid, all of which are considered infectious. Key measures include the use of personal protective equipment (condoms and dental

dams) as barriers, simulation of sexual acts in postproduction editing without exposing performers to infectious bodily fluids, and ejaculation outside of the partner's body. In addition, vaccination against hepatitis B and prophylactic measures after unprotected contact with blood, semen, or vaginal fluid are required.

After the 2004 outbreak, California OSHA issued citations to 2 production companies that employed performers with newly diagnosed HIV infections for failing to comply with the state's bloodborne pathogen standard,<sup>7</sup> failing to report a serious work-related illness, and failing to prepare and follow a written occupational injury and illness prevention program.<sup>8</sup> Although California OSHA has jurisdiction over places of employment in California, it conducts inspections only in response to occupational safety complaints or as part of an inspection program in industries with high rates of health hazards.<sup>9</sup> Since 2004, no further citations have been issued to adult film companies.

Because little is known about what types of sexual acts occur in adult films and how

consistently performers use condoms during sexual acts that can transmit HIV and other STDs, we conducted what we believe to be the first study on the topic. The male homosexual film industry was used as a comparison for the heterosexual film industry because we hypothesized that gay adult films were more likely to show condoms, possibly because of the greater prevalence of HIV in the gay community. In addition, heterosexual and homosexual films are the main division by which adult films are classified and marketed, as indicated by their separate online sales operations. We documented the prevalence of sexual acts and condoms in adult films and compared the frequency of condom use in scenes from heterosexual and homosexual adult films.

## METHODS

We performed a content analysis of adult films to document sexual acts and condom use in heterosexual and homosexual adult films.<sup>10,11</sup> Heterosexual and homosexual adult films

**Objectives.** We compared the prevalence of condom use during a variety of sexual acts portrayed in adult films produced for heterosexual and homosexual audiences to assess compliance with state Occupational Health and Safety Administration regulations.

**Methods.** We analyzed 50 heterosexual and 50 male homosexual films released between August 1, 2005, and July 31, 2006, randomly selected from the distributor of 85% of the heterosexual adult films released each year in the United States.

**Results.** Penile–vaginal intercourse was protected with condoms in 3% of heterosexual scenes. Penile–anal intercourse, common in both heterosexual (42%) and homosexual (80%) scenes, was much less likely to be protected with condoms in heterosexual than in homosexual scenes (10% vs 78%;  $P < .001$ ). No penile–oral acts were protected with condoms in any of the selected films.

**Conclusions.** Heterosexual films were much less likely than were homosexual films to portray condom use, raising concerns about transmission of HIV and other sexually transmitted diseases, especially among performers in heterosexual adult films. In addition, the adult film industry, especially the heterosexual industry, is not adhering to state occupational safety regulations. (*Am J Public Health.* 2009;99:S152–S156. doi:10.2105/AJPH.2007.127035)

produced after 2004 and released between August 1, 2005, and July 31, 2006, were randomly selected from the largest US distributor of adult films to achieve a final sample of 50 eligible films from each industry. We used 2-stage random sampling.<sup>12</sup> One scene was randomly selected from each film and used as the unit of analysis.

The largest Internet rental sites for heterosexual and homosexual adult films were identified through key informant interviews and an Internet search; 10 heterosexual and 4 homosexual rental sites were reviewed. Adult DVD Empire was identified as the rental site with both the greatest number of DVDs and largest variety of production companies for both heterosexual and homosexual adult films. It included DVDs from 615 heterosexually and 339 homosexually oriented production companies. The site's database included 9409 heterosexual and 1530 homosexual DVDs released in the 12 months prior to August 2006. This represented 85% of the approximately 11 000 heterosexual films released each year<sup>13</sup> and an unknown percentage of homosexual releases. Therefore, we focused our review on films produced by Adult DVD Empire.

Adult films that were identified through Adult DVD Empire and had been released in the 12 months preceding August 2006 were eligible for the study with the following exceptions: films produced outside the United States, films produced before 2005, compilation DVDs (collections of preexisting scenes), films with only single-performer scenes, and DVDs not segmented into individual scenes. Country and year of production were obtained from the DVD cover or opening credits. A film was classified as homosexual if it was listed as being for rent or for sale on the Adult DVD Empire gay film site (which included bisexual films); films not listed on this site were classified as heterosexual.

We randomly selected DVDs until we obtained 50 eligible heterosexual and 50 eligible homosexual films. A random-number generator was used to select films from either the heterosexual or homosexual Adult DVD Empire database, and DVDs were excluded if they did not meet the eligibility criteria. For heterosexual films, we used the Adult DVD Empire's advanced search tool to exclude all films defined by the site as compilations, which

reduced our initial sample of heterosexual films from 9409 to 7310. We then reviewed 62 films sampled from the 7310 available; 12 films did not meet inclusion criteria because they were produced outside of the United States ( $n=3$ ) or before 2005 ( $n=7$ ), were single-performer films ( $n=1$ ), or were not divided by scene ( $n=1$ ). To obtain 50 eligible homosexual films, we reviewed 127 films sampled from the 1530 available films. Because there was no search tool to identify compilations on the Adult DVD Empire gay film site, exclusion of compilations required review of the DVD information provided on the Web site. Films were excluded because they were produced outside the United States ( $n=14$ ) or before 2005 ( $n=44$ ) or because they were compilations ( $n=15$ ) or single-performer films ( $n=4$ ).

The unit of analysis for the study was the scene. Therefore, we randomly selected 1 eligible scene from each film. We identified the total number of scenes for each DVD as described on the scene list at the beginning of each film and randomly sampled 1 scene for review through a random-number generator. Nonsexual and single-performer scenes were excluded. Sexual contact was defined as any oral–genital, oral–anal, penile–vaginal, or penile–anal contact between 2 or more performers. We considered oral–genital and oral–anal contact as 1 category because it was often difficult for the viewer to distinguish between the 2 acts. A nonsexual scene was defined as a scene in which there was no sexual contact between performers. If a nonsexual scene was selected, the coder randomly selected another scene from the DVD.

We developed a codebook of definitions of sexual acts. The principal investigator and the 2 coders then used an iterative process that involved reviewing 10 sample scenes to clarify the definitions; these 10 scenes were not included in the reported analyses.

We reviewed each selected scene for the nature of the sexual acts performed and whether condoms were used where appropriate. Sexual acts in each selected scene were categorized by type: (1) oral–genital or oral–anal contact was defined as the tongue of 1 performer touching the vagina or anus of another performer or the penis entering the oral cavity of another performer by more than 1 inch, (2) penile–oral contact was defined as

insertion of the penis at least 1 inch into the oral cavity of another performer, (3) penile–vaginal and penile–anal contact were defined as insertion of the penis at least 1 inch into the vagina or anus of another performer, and (4) anal-to-oral penile insertion was defined as insertion of the penis into the oral cavity of a performer directly after insertion into the anus of a performer. Penile sexual acts were defined as any penile–oral, penile–vaginal, or penile–anal contact.

We also noted the presence of visible blood during a scene as well as the location of seminal ejaculation, because blood and ejaculate are potentially infectious bodily fluids. Location of the ejaculation was defined as internal oral ejaculation (i.e., any ejaculation inside the mouth); facial, nonoral ejaculation (i.e., ejaculation onto the face without internal oral cavity ejaculation); external vaginal ejaculation; external anal ejaculation; ejaculation onto the breast or another body surface area; or no ejaculate contact with another performer. Mucous membrane ejaculate contact was defined as any ejaculation into the oral cavity, the external vaginal area, or the external anal cavity. Internal vaginal and internal anal ejaculation were not reported because they could not be directly observed.

For each selected scene, use of condoms for each type of sexual act was measured with a 4-category variable: act did not occur (0); act occurred, condom was never used (1); act occurred, condom was used some of the time (2); or act occurred, condom was always used (3). The condom-use variable was collapsed for analytic purposes into any condom use for a particular type of sexual act in a specific scene, even if it was not used all of the time, versus no condom use for that type of sexual act.

Of the 100 films, 83 (40 homosexual and 43 heterosexual) were double coded to calculate interrater reliability with Cohen's  $\kappa$ , which ranged from 0.75 to 1.00 for presence of the various types of sexual acts ( $P<.001$ ) and was 0.78 for condom use in any penile act ( $P<.001$ ). For each double-coded scene in which there was disagreement, the values chosen by a randomly selected coder were used for the analysis.

Our main independent variable was whether the film was marketed to a heterosexual or homosexual audience. The 2-sided Fisher exact

**TABLE 1—High-Risk Sexual Acts in Heterosexual and Homosexual Adult Films: United States, 2005–2006**

Type of Sexual Act	Heterosexual Scenes (n=50), No. (%)	Homosexual Scenes (n=50), No. (%)
Penile-vaginal contact**	35 (70)	1 (2)
Penile-anal contact**	21 (42)	40 (80)
Oral-genital or oral-anal contact	47 (94)	50 (100)
Penile-oral contact*	42 (84)	50 (100)
Mucous membrane contact**	24 (48)	5 (10)
Anal-to-oral penile insertion <sup>a</sup> *	11 (22)	0 (0)

<sup>a</sup>Penile-oral insertion immediately following penile-anal insertion.

\* $P < .05$ ; \*\* $P < .001$ .

test was used to detect differences in the prevalence of sexual acts and in condom use by type of sexual act between the heterosexual and homosexual films.

## RESULTS

Forty production companies produced the 50 heterosexual films, and 31 companies produced the 50 homosexual films. Heterosexual scenes had an average of 1.17 male (SD=0.65) and 1.22 female (SD=0.61) performers. Homosexual scenes averaged 2.65 males (SD=1.14) and 0.04 females (SD=0.20). As shown in Table 1, the prevalence of 5 of 6 measured types of sexual acts differed between heterosexual and homosexual films. As expected, vaginal intercourse was more prevalent among heterosexual than homosexual scenes (70% vs 2%;  $P < .001$ ). Although almost half of heterosexual scenes portrayed anal intercourse (42%), this was less common than in homosexual scenes (80%;  $P < .001$ ). Penile-oral contact, a subset of oral-genital contact, occurred in most heterosexual (84%) and all homosexual (100%;  $P = .006$ ) scenes. Oral-genital or oral-anal contact was nearly universal in all films, occurring in 94% of heterosexual scenes and 100% of homosexual scenes ( $P = .242$ ).

Ejaculate contact with mucous membranes, including oral, vaginal, or anal mucosa, was significantly more likely to occur in heterosexual scenes (48%) than in homosexual scenes (10%;  $P < .001$ ). Insertion of the penis into the mouth immediately following penile-anal insertion was absent from the homosexual scenes

but occurred in 22% of heterosexual scenes ( $P = .001$ ). No blood was observed in any of the 100 scenes reviewed.

Table 2 shows the prevalence of any observed condom use by type of sexual act in heterosexual versus homosexual films. Condoms were used for penile sexual acts in 7% of heterosexual and 64% of homosexual scenes ( $P < .001$ ). Condoms were used for penile-vaginal intercourse in 3% of heterosexual scenes. A condom was used in the single instance of penile-vaginal intercourse observed in a homosexual scene. Condom use for penile-anal intercourse was more likely in homosexual scenes (78%) than in heterosexual scenes (10%;  $P < .001$ ). Condom use for penile-anal intercourse in homosexual scenes was also significantly higher than for penile-vaginal intercourse in heterosexual scenes ( $P < .001$ ). There was no condom use for penile-oral intercourse in either heterosexual or homosexual scenes.

## DISCUSSION

Our study found that performers in both heterosexual and homosexual adult films did not consistently use condoms and that condoms were used infrequently in heterosexual films. Condoms were uncommon in adult films not only when oral sex was performed but also for more high-risk sexual acts such as vaginal and anal intercourse, especially in heterosexual adult films. Performers in homosexual adult films more consistently used condoms for anal intercourse than did performers in heterosexual adult films for either vaginal or anal intercourse. Despite the frequent use of condoms in homosexual adult films, these films remain popular. In fact, some gay male audiences regard watching sex without condoms as “viewing death on the screen.”<sup>14</sup>

### Risk of HIV Transmission

The use of condoms has been shown to reduce the risk of HIV and other STDs. A meta-analysis found that condoms are 90% to 95% effective in preventing HIV transmission.<sup>15</sup> Sexual contact is a high-risk exposure for HIV. Receptive penile-anal intercourse has the highest per-contact risk for HIV transmission, with 80 infections per 10 000 contacts,<sup>16</sup> higher than needlestick injuries (10–50 per 10 000)<sup>17</sup> or receptive penile-vaginal penetration (10 per 10 000).<sup>18</sup> The presence of coinfection with other STDs, which are prevalent among adult film performers,<sup>19</sup> also increases the risk of HIV transmission. The relative risk of HIV acquisition in a penile-vaginal receptive partner increases 2 to 4 times when the receptive

**TABLE 2—Condom Use During High-Risk Sexual Acts in Heterosexual and Homosexual Adult Films: United States, 2005–2006**

Type of Sexual Act	Heterosexual Scenes		Homosexual Scenes	
	Condoms Used, <sup>a</sup> %	Scenes With Condom Use (Total Scenes)	Condoms Used, <sup>a</sup> %	Scenes With Condom Use (Total Scenes)
All penile contact <sup>b</sup> **	7.0	3 (43)	64.0	32 (50)
Penile-vaginal contact	2.9	1 (35)	100	1 (1)
Penile-anal contact**	9.5	2 (21)	77.5	31 (40)
Penile-oral contact	0	0 (42)	0	0 (50)

<sup>a</sup>A sexual act in a scene was coded as positive for condom use if a condom was used at least 1 time during that type of act.

<sup>b</sup>Includes penile-vaginal, penile-anal, and penile-oral contact.

\*\* $P < .001$ .

partner is coinfecting with herpes simplex virus type 2.<sup>20</sup>

Condom use would decrease the likelihood of transmission from performers who acquire HIV and STDs outside the workplace to other performers on the set. In addition, condom use could help prevent unintended pregnancy and the complications of STDs. The voluntary HIV and STD screening program is not adequate to ensure the health of performers.

Although some companies may voluntarily implement a condom-only policy, it is unlikely that this industry will establish safer working conditions for employees without pressure from the workers themselves or external regulation. Vivid Entertainment Group, one of the largest producers of adult film in the United States, temporarily implemented a condom-only policy but then reversed itself.<sup>21</sup> This switch to optional condom use occurred in 2006, after the institution of California OSHA's model exposure plan, indicating that the plan has likely had little or no effect on condom use in the adult film industry.

### Interventions to Increase Condom Use

Some efforts to increase condom use have succeeded among other types of sex workers.<sup>22</sup> In 2004, the World Health Organization created a Sex Work Toolkit to aid in implementation of successful programs, including behavioral interventions, such as outreach, peer support, and education, and structural changes, such as condom-only policies.<sup>23</sup> One successful behavioral intervention took place in 1992 in Calcutta, India. Four thousand brothel-based sex workers, the All India Institute of Hygiene and Public Health, government agencies, and community-based organizations collaborated to control and prevent HIV infections through condom promotion and information, education, and communication programs and activities.<sup>24</sup> The project evolved to focus on empowerment and gender issues, negotiation skills, and capacity building among the women.<sup>25</sup>

The state of Nevada uses a structural, regulatory approach, requiring condom use in brothels. Interviews conducted with commercial sex workers in Nevada brothels determined that compliance with condoms was high, with only 2.7% of clients initially refusing them.<sup>26</sup> Similar strategies should be undertaken to increase condom use among

adult film performers, such as projects that focus on empowerment of performers through education and capacity building or external regulation and monitoring of compliance by the government.

In addition to decreasing risks to performers, condom use in adult films might benefit the audience. It is known that the media affects health attitudes and risk behaviors; thus the consistent presence of condoms in heterosexual adult films might increase their use off screen. Exposure to adult films, even among youths, is not uncommon. One study showed that 42% of Internet users aged 10 to 17 years had viewed online pornography in the past year.<sup>27</sup> The media can affect health risk behaviors, both positively and negatively. For example, watching sexual content on network television has been associated with earlier sexual initiation in youths.<sup>28</sup> A study of condom-efficacy information showed that 65% of viewers of an episode of the television show "Friends" remembered that condom failure could result in pregnancy, demonstrating that the media can provide health education.<sup>29</sup> The portrayal of safe sex in adult films may influence attitudes and viewer behavior. The use of condoms may influence viewers to see condoms as normative or even sexually appealing and to devalue unsafe sex. Condom use in adult films viewed by large audiences could lead to safer sex.

### Limitations

This study had limitations, including the absence of outcome data on acquisition rates of HIV and other STDs. In addition, some scenes were not double coded (17 of 50), although our  $\kappa$  were still all above 0.75. Also, the high-risk sexual practices that were studied were limited to those captured on the DVDs and did not include all of the sexual acts that occurred during filming. Internet broadcasts and smaller production companies may not have been captured by our sampling methods, which missed 15% of the heterosexually oriented films and an unknown percentage of the homosexually oriented films.

Our sampling strategy was limited by the industry's distribution structure and may have resulted in an underestimation of sexual risk, because Internet broadcasts and smaller companies might be less likely to require

performers to use condoms and more likely to show high-risk sexual acts. However, we showed that condom use was low in heterosexual adult films, even though we deliberately underestimated the risk by defining condom use as present if condoms were used some but not all of the time in a specific scene. A larger sample size might have allowed the detection of additional smaller differences between heterosexual and homosexual films for those measures where we did not find a difference. Our study also was not powered to detect other important differences that might have existed among production companies, directors, or genres.

### Conclusions

This study provides strong evidence that heterosexual adult film performers usually perform without barrier protection against HIV and other STDs and that these films and the industry are out of compliance with California OSHA regulations. The homosexual adult film industry, on the other hand, usually depicts condom use for high-risk sexual acts such as anal intercourse. Enforcement of California OSHA regulations through periodic surveillance and penalties for lack of compliance would be one way to improve the safety of adult films and the health and safety of performers. Further study is needed to determine whether sexual acts portrayed in adult films affect the type of acts performed by the audience and whether use of condoms in adult films increases their use in the general population. If so, this would over time improve public health. ■

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## Contributors

All authors contributed to the conception and design of the study. C. R. Grudzen originated the study, helped develop the coding and sampling scheme, supervised the acquisition of data, analyzed and interpreted the data, and wrote the initial draft of the article. M. N. Elliott originated the study, guided development of the coding and sampling scheme, data analysis plans, and interpretation of data, and reviewed and revised drafts of the article. P. R. Kerndt, M. A. Schuster, R. H. Brook, and L. Gelberg also originated the study, guided interpretation of results, and reviewed and revised drafts of the article.

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## Human Participant Protection

The protocol was reviewed by the University of California, Los Angeles, institutional review board and was determined to be exempt from the approval process.

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