

## **Sexually Transmitted Diseases in US Prisons: Differences between Men and Women Inmates on General Knowledge, Likely and Unlikely Routes of Infection, and Sexual Transmission**

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### **Abstract**

*Two-hundred ninety eight male and 155 female inmates were surveyed measuring knowledge of the Acquired Immune Deficiency Syndrome virus, symptoms, and understanding of prevention measures. The device also was adapted to measure their perceptions of personal risk of HIV infection as well as their future behavioural intentions in the areas of IV drug use and risky sex. This article reports on the differences between men and women in the areas of: 1) general knowledge, 2) knowledge of likely routes of transmission; 3) knowledge of unlikely routes of transmission; and 4) knowledge of sexual transmission. Unexpectedly, it was found that male and female inmates are similar in terms of knowledge. Implications are discussed.*

**Key words:** AIDS knowledge, inmates, prison

### **1 Introduction and Problem Statement**

Amid the ever-growing body of research related to the study of infectious disease among U.S. prison and jail inmates, one emerging need is to pinpoint what incarcerated persons really know about how to protect themselves from HIV infection, where they are getting their information, and what sources will be the most successful at driving home the necessary points, in order to create educational strategies that will not only provide information but actually encourage behavior modification. Past research has found that high levels of knowledge do not correlate perfectly with changes in behavior. With this being the case, the stressors of daily life may make high-risk behaviors more enticing to inmates, particularly during the early post-release and reentry phase (Collica, 2002; Keeton and Swanson, 1998; Krebs, 2006; Martin, Zimmerman, Long, and West, 1995; Moseley and Tewksbury, 2006; Power, Markova, McKee, and Kilfedder, 1995; Swartz, Lurigio, and Weiner, 2004). The disruption of inmates' relationships during incarceration may lead to "sexual risk-taking" in the form of new and multiple partners by both the inmate and his or her former partner, especially if the incarceration leads to the inmate's involvement in a new social network of those who participate in high-risk activities (Khan, Epperson, Bolynard, Sandoval, and Friedman, 2011; Martin et al., 1995).

Inmate populations need additional information and training to supplement HIV/AIDS awareness in order to put their knowledge into practice. One example would be the need many women have for empowerment training in negotiating skills to shore up their ability to insist on condom use to prevent them from acquiescing to their partner's preference of unsafe sex. This points to the need for specialized, if not individualized, educational programs (Albarracin, Albarracin, and Durantini, 2007). However, not all corrections facilities approach HIV/AIDS education the same way. Some institutions whole-heartedly embrace peer-led education efforts (Ehrmann, 2002; Long, 2006; Ross, Harzke, Scott, McCann, and Kelley, 2006) whereas some systems provide only written materials or instructional videos (Long, 2006; Martin et al., 1995).

Few U.S. institutions are willing to risk giving inmates access to the best available tools for HIV prevention (e.g., condoms, clean needles, and bleach) (Ehrmann, 2002; Krebs, 2006; Long, 2006, Okie, 2007) and no U.S. Departments of Correction have a needle exchange program (Long, 2006; Martin et al., 1995; May and Williams, 2002; Okie, 2007). This means that the information gleaned in HIV/AIDS instruction is not being reinforced by practice. The factors listed above add up to a hit-or-miss outcome in terms of whether inmates will continue to put themselves and their partners at risk for HIV exposure. In order for prison administrators, public health authorities, and community-based organizations to make the best use of the limited window of opportunity afforded by a stint in jail or prison to change the behaviors of inmates at risk for exposure to HIV infection, programs must be developed that will address gaps in HIV/AIDS knowledge as well as provide information that will have a lasting impact on the recipients. The current study sought to identify such knowledge gaps.

## **2 Prevalence of HIV/AIDS Infection in U.S. Prisons/General Public**

Perhaps due to the success of antiretroviral drugs to suppress HIV infection and extend the lives of those who are seropositive, the message of HIV/AIDS awareness does not cause the same type of alarm that it did in the 1980's and into the 1990's, when a positive HIV test was equivalent to a death sentence. The lack of conviction that HIV/AIDS is a credible threat, coupled with a lack of knowledge of dangers such as drug-resistant strains of the disease and misconceptions such as the lingering belief that AIDS is primarily a disease that afflicts homosexuals may lull inmates into participating in high-risk behaviors, both while incarcerated and in the community. Between 47,000-56,000 new HIV infections are reported each year, and every year there are 18,000 AIDS-related deaths (CDC HIV Incidence, 2011). A study of routine HIV testing among inmates further demonstrates how desensitization to HIV/AIDS awareness and other misconceptions end in a seroconversion. Forty-eight percent of the inmates who tested positive for HIV were heterosexuals who reported that neither they nor their partner(s) were at risk for HIV. The Bureau of Justice Statistics reported that as of 2008, 21,987 prisoners were infected with HIV, or had AIDS (Maruschak, 2005).

In fact, incarcerated persons as a group are four times more likely to be infected with HIV than those in the community at large, and as a subset of that group, incarcerated females were 15 times more likely to be HIV positive (Havens, et al., 2009). With such alarming numbers, the need for sound knowledge about HIV/AIDS risk reduction and effective behavior modification programs is critical for both those who are incarcerated and those with whom they may become intimate, either while incarcerated or upon release. A precursor to this study was undertaken by Celentano, Brewer, Sonnega, and Vlahov in 1990, in a comparison of HIV transmission and prevention knowledge among inmates in Maryland versus the knowledge among the U.S. general population. For the study, Celentano et al. used a survey completed by a random sample of 210 male inmates and compared responses to those submitted by 1,766 male interviewees who completed the AIDS Knowledge and Attitudes Questionnaire (AKAQ) as part of the 1988 National Health Interview Survey. They found that inmates were similar to the general population in terms of HIV/AIDS knowledge with inmates being somewhat better informed about the viral origins of HIV; neither group was aware of the link between HIV and damage to the cardiovascular system. Both groups were fairly well versed on the use of prophylactic measures to guard against infection and on likely routes of transmission for HIV.

Similarly, the groups were comparable in the areas of identifying sexual intercourse, IV drug use and transmission of the disease from a mother to her child as probable sources of HIV infection. Inmates were found to be slightly more likely to believe unlikely routes of transmission were hazards, but Celentano et al. found both inmates and the general public were wrongly concerned about kissing as a possible route of transmission.

More recent studies have revealed changes in attitudes among jail and prison inmates. Collica (2002) found there tends to be an underestimation of personal risk. Prisoners in some studies have indicated the belief that luck or fate plays a role in HIV infection and many believe that they will contract HIV no matter what they do (Swartz, Lurigio, and Weiner, 2004). Further, Moseley and Tewksbury (2006) noted that inmates with high levels of knowledge about HIV transmission still engaged in high-risk behaviors because they believe the risk is worthwhile or because behaviors associated with the risk are extremely difficult to change.

While some inmates have a functional knowledge of the likely transmission routes of HIV/AIDS (unprotected sex, sex with multiple partners, IV drug use), there is less clarity about less likely routes of transmission, as witnessed by their confusion about whether it was safe to eat food prepared by someone infected with HIV.

Other subjects have erroneously thought mosquitoes, kissing, sharing plates and/or cutlery, saliva, and airborne transmission were likely routes of infection (Keeton and Swanson, 1998).

As for likely routes of transmission, studies have found that in the case of IDU, many inmates know that sharing needles poses a risk, but were not aware that sharing intravenous drug “works” might be an avenue to infection and many inmates do not have a clear understanding about oral sex (Keeton and Swanson, 1998).

### **3 Conceptual Justification**

Males and females differ in terms of modes of acquiring and transmitting HIV. Also, there is evidence to suggest that women view environmental hazards as more salient to them (Harris and Glaser, 2006). The symptoms of HIV also can be different for men and women. It would seem, then, that men and women should not be exposed to identical AIDS education programs. The two groups learn information differently (Pearson, 1992; Magolda, 1989; Baxter and Marcia, 1987). In other words, a program developed for men should not simply be transplanted into women’s facilities. In light of these differences, for this study it was predicted that there would be significant knowledge gaps between the groups.

In sum, differences were expected between male and female inmates. The data collection methods used for this project were designed to allow for the examination of gender-based differences and aid in the understanding of how best to address knowledge inequities. Similarly, women were expected to exhibit knowledge deficits for the following additional reasons: 1) their health problems have been de-emphasized (Jeffery, 1989; Ross and Lawrence, 1996); 2) they have unique problems associated with HIV infection (Chung and McGraw, 1992); 3) they have more problems with IV drug involvement (Inciardi, Lockwood, Pottieger, 1993); 4) there are different socially constructed expectations associated with each gender (Herzog, Bachman, Johnston, and O’Malley, 1987); and 5) they learn information differently and trust different people than do men (Leonardo and Chrisler, 1992). Consequently, the following hypothesis was derived: women inmates will have significantly less knowledge about HIV/AIDS than do men (i.e., lower mean percentage correct responses in each of the five knowledge categories measured).

### **4 Methods**

Two hundred ninety-eight male and 155 female inmates were sampled from three prisons in a northeastern state known to be substantially higher than average in HIV prevalence when compared to prisons across the nation. A modified version of the AKAQ was administered to them in groups of 15-20 each. Respondents were told their participation was voluntary and that they could stop at any time. Anonymity was guaranteed.

#### **4.1 The Survey**

The survey used for this project was the AKAQ. It was adapted from a version developed by the Department of Health and Human Services. This device has been successfully used in prison populations (Celentano et al., 1990) and the general population (Schoenborn, Marsh, and Hardy, 1994). The device consists of four areas of AIDS knowledge: 1) general knowledge; 2) knowledge of likely routes of HIV transmission; 3) knowledge of unlikely routes of HIV transmission; and 4) knowledge of transmission via sex. An additional category of overall knowledge was created based on the other four areas combined. Each index was validated using the internal consistency method. That is, the items for each index were correlated with other items within their own index to compute an average correlation. The final internal consistency value for each index was between .70 and .90 which means all items within their respective indexes are in fact measuring the intended variable. An average correlation between .70 and .90 is accepted as the conventional benchmark for Cronbach’s alpha ensuring that irrelevant items are not being included in an index (Cronbach, 1951).

#### **4.2 General Knowledge**

General knowledge was conceptualized as the body of information concerning HIV/AIDS that relates to universal aspects of the disease. The general knowledge items listed below were combined to form the index “general knowledge:”

- AIDS is caused by a virus. (true)
- AIDS can cripple the body’s natural protection against disease. (true)
- AIDS is especially common among older people. (false)
- AIDS usually leads to heart disease. (false)

- AIDS leads to death. (true)
- A person can be infected with HIV and not have AIDS. (true)
- You can tell if someone has AIDS just by looking at them. (false)
- There is no cure for AIDS. (true)
- You can get AIDS if you have many different sex partners, even if you are not homosexual. (true)
- Women can get HIV from having sex with a man who has AIDS. (true)
- AIDS can really disfigure your appearance. (true)
- To prevent AIDS, during sex you should use condoms every time. (true)
- Cleaning needles with bleach will help prevent you from getting infected. (true)
- A person can carry and pass on HIV without having symptoms. (true)
- Condoms are overrated in preventing AIDS. (false)
- There is nothing you can do to prevent getting AIDS. (false)
- Getting AIDS is a matter of luck. (false)
- Bleeding after intercourse is generally nothing to worry about. (false)

#### 4.3 Knowledge of Likely Routes of Transmission

This dimension of knowledge refers to inmates' ability to recognize normal or common routes of HIV transmission. Normal routes of HIV transmission are those that involve high risk behaviors such as unprotected sex and/or IV drug use. One exception is HIV transmission involving mother and child that may not involve high risk behavior. These items were indexed into a variable called "likely routes:"

- A pregnant woman who has HIV can pass it on to her baby. (true)
- It is possible for a person to get AIDS from sharing needles used for IV drug use with someone who has AIDS. (true)
- It is possible to get AIDS by having sex with a person who is infected with HIV. (true)

#### 4.4 Knowledge of Unlikely Routes of HIV Transmission

This dimension of knowledge refers to routes of HIV transmission that occur either very infrequently or are believed to be impossible or at least highly improbable. A knowledge deficit in this area is dangerous because it can lead to irrational fear or even prison violence. The items comprising the index "unlikely routes" are below. Correct answers were either "very unlikely" or "unlikely" for each on a five-point Likert scale:

- How likely do you think it is that a person will get HIV from receiving a blood transfusion?
- What about from donating blood?
- What about living near a hospital or a home for AIDS patients?
- What about working near someone who has AIDS?
- How likely is it that a person will get AIDS from eating at a restaurant where the cook has AIDS?
- What about kissing, with exchange of saliva, a person who has AIDS?
- What about shaking hands with, or touching, someone who has AIDS?
- What about sharing plates, forks, or glasses with someone who has AIDS?
- What about using public toilets?
- What about kissing on the cheek a person who has AIDS?
- What about being coughed or sneezed on by someone who has AIDS?
- What about attending a school where a child has AIDS?
- What about from mosquitoes or other insects?
- What about from pets or other animals?

#### 4.5 Knowledge of HIV Prevention Methods Involving Sexual Transmission

This dimension sought to assess inmates' knowledge of how, in general, they could prevent HIV acquisition involving sexual relations. The answers are in parentheses. These items were combined into an index called "sexual transmission." The matrix question set began, "with reference to HIV prevention..."

- How effective is using a condom? (Very effective or somewhat effective)
- How effective is using spermicidal jelly, foam or cream? (Not effective)
- How effective is being celibate, that is, not having sex at all (very effective or somewhat effective)

- How effective is it when two people who do not have HIV have a completely monogamous relationship, that is, when they have sex only with each other? (Very effective or somewhat effective)

## 5 Results

The men and women performed similarly in all but one area (see Table 1 about here). They were similar in mean percentage correct for general knowledge, knowledge of likely routes, knowledge of sexual transmission, and overall knowledge (a composite of the four areas combined). In other words, the men and women correctly answered about the same percentage of items on these indexes. There was, however, a difference of five percentage points in their performance on questions related to knowledge of unlikely routes. The men correctly answered fewer items pertaining to unlikely routes than did the women. T- tests were performed on each of the knowledge categories to determine if differences were statistically significant (Table 1):

## 6 Discussion

Four of the T-tests showed no significant differences between the means of the men and women. In fact, their means on those four indexes were almost identical. While the difference between the men's and women's knowledge of unlikely routes was five percentage points, it is not in the predicted direction. The hypothesis that women would exhibit significant knowledge deficits, due to the reasons noted above, is unsupported. Women inmates do not seem to be marginalized relative to male inmates nor do not appear to be handicapped by being exposed to substandard AIDS education programs. Despite the fact that women's facilities have traditionally adopted male education programs, they are at least as knowledgeable as the men.

One caveat is in order here, however. The data presented here do not reflect issues that impact females exclusively. For example, symptoms of HIV can be different for men and women. Women can manifest symptoms such as frequent yeast infections, irregular vaginal discharge, and bleeding between menstrual cycles. Similarly, other survey items that will be presented in a future report include "female-specific knowledge." For example, questions such as: 1) having a vaginal exam is a good way to find symptoms that might be caused by AIDS; 2) the symptoms of AIDS can be different for women than they are for men; 3) a woman is more likely to get AIDS from an infected man than a man is to get it from an infected woman; 4) it is impossible for a woman to get AIDS from oral sex with an infected man; and 5) it is impossible for a woman to get AIDS from oral sex with an infected woman were asked. The responses will be used to assess the extent to which women are deficient on the female-specific issues that are not addressed by the traditional AKAQ.

Finally, another aspect of female-specific information that is forthcoming measures women inmates' attitudes about men and the use of HIV-inhibiting contraception. The objective of these items was to find out how assertive women were with reference to having sex and/or using condoms with their partners in the past and will include: 1) men usually won't wear condoms during sex, even if a woman wants them to; 2) women often have sex with men even when they really do not want to; 3) men usually get what they want because women are afraid to resist them; and 4) it is very unlikely that someone who is drunk or high will use condoms during sex. Taken together, these female-specific items will be used to measure deficits of knowledge and attitudes that put women inmates at risk for HIV infection.

In summary, the data here suggest that men and women know approximately the same amount. Means on all indexes, except likely routes, still are very low, indicating a need to improve AIDS education efforts in prisons. While it is true that when comparing men and women, neither group appeared to be significantly disadvantaged, they are both in need of education in order to raise their scores on these indexes. This is especially true in light of the fact the inmates tend to practice behaviors that put them at serious risk for HIV infection.

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**TABLE 1: ONE-TAIL T-TEST COMPARISON OF MEN'S AND WOMEN'S KNOWLEDGE (MEAN % CORRECT)**

<b>Variable</b>	<b>Sex</b>	<b>Mean Correct</b>	<b>% T-Value</b>
<b>General Knowledge</b>	Male	59.7	T = -0.01
	Female	60.6	
<b>Likely Routes</b>	Male	95.9	T = 0.22
	Female	95.7	
<b>Unlikely Routes</b>	Male	62.0	T = -2.26*
	Female	67.1	
<b>Sexual Transmission</b>	Male	68.2	T = .33
	Female	67.5	
<b>Overall Knowledge</b>	Male	71.5	T = -1.27
	Female	72.6	

\* Significant difference at the P < .05 level