Epidemiology of Sexually Transmitted Infections among MSM in the United States

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Responding to Resurgent HIV/STI Incidence Among MSM in CT: Effective HIV Prevention Interventions for Gay Men
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In 2007, 56% of new HIV/AIDS cases were reported among MSM

Up to 70% of HIV transmission may be among MSM

The rate at which MSM become infected is over 44 times the rate for other men & more than 40 times the rate for women
Estimated numbers of new HIV infections are increasing for MSM and are decreasing for other groups.


Hall, H. I. et al. JAMA 2008;300:520-529.
In the 1980s HIV spread rapidly through the MSM population. The MSM population became “saturated” by the infection.

HIV prevalence by year in the 320 men in the San Francisco Gay Men’s Hepatitis B Cohort
HIV/AIDS Cases among MSM by Age Group, 2001 – 2006, 33 States

Note: Data adjusted for reporting delays and estimated proportional redistribution of cases initially reported without risk. "Estimated Number of HIV/AIDS Diagnoses among Adult and Adolescent MSM, by Race, 2006—33 States."


- White, not Hispanic
- Black, not Hispanic
- Hispanic
- American Indian/Alaska Native
- Asian/Pacific Islander
- Unknown or Multiple Races

Note: Data statistically adjusted for reporting delays and redistribution of cases in persons initially reported without an identified risk.

For all ethnic and racial groups, the number of new infections among MSM exceeds that of any other group.
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HIV/AIDS Cases among MSM aged 13-24, 2006, 33 States

MSM account for 59% of HIV/AIDS cases in 13-19 year olds
MSM account for 65% of HIV/AIDS cases in 20-24 year olds
MSM of color get HIV younger than do White MSM.
Although Latino MSM have similar numbers of partners and use condoms as frequently as other MSM, they’re 3 times more likely than White MSM to acquire HIV.

Hall et al., AJPH 2007

Compared with U.S.-born HIV-positive patients, non-U.S. born HIV-positive Latinos more likely to:

- Present with lower CD4 at diagnosis
- Have an opportunistic infection at dx
- Be hospitalized at dx

Levy, 2007
Although black MSM have similar numbers of partners and use condoms as frequently as other MSM, they’re 5 times more likely than White MSM to acquire HIV.

Black MSM are tested for HIV less frequently than are other MSM, when infected are less likely to know they have HIV, and are diagnosed at a later stage of infection than other MSM.
What’s going on with men of color?

Greater probability of becoming infected may be due to:

- Less diagnosis of HIV → unknowing exposure
- More bacterial STIs
- Less ART usage
- Greater age difference in partnerships
- Denser sexual networks than other MSM

Millett, et al. JAIDS 2007

http://www.cdc.gov/hiv/resources/podcasts/index.htm#MSM
The number of “jumps” to get from Person A to Person B in a “tighter” network facilitates high prevalence.

And the smaller your population’s dating pool, the “tighter” the network.
Our infection risk is only partly determined by our individual actions.

It’s largely determined by population factors that aren’t readily apparent.

(Nerd humor)
HIV infection is prevalent among MSM of color

National HIV Behavioral Surveillance Survey, 2004-5  n=1767

- 46% of Black MSM
- 21% of Hispanic MSM
- 17% of Multiracial MSM
- 19% of All others
- 13% of White MSM
- 28% of Total
Undiagnosed infection is prevalent among MSM of color

Proportion of MSM in racial/ethnic category who had HIV but were unaware

- White: 4%
- Black: 31%
- Hispanic: 8%
- Multiracial: 10%
- All others: 7%
- Total: 13%
Every year in the US, 1% of HIV-negative MSM become infected with HIV. It’s 2% (1 in 50) in urban areas.

Among who are now 18 and HIV negative, a projected 41% will be HIV positive by age 40.

For African-American MSM, a projected 59% will be HIV positive by age 40.
• Projected prevalence is higher than in sub-Saharan countries. UNAIDS 2007

• Projected HIV prevalence is comparable to that reported in San Francisco in 1984, prior to AIDS education efforts. Winkelstein et al. 1987
Two-thirds of HIV transmission among MSM occurs between main partners
Sullivan et al., AIDS 2009

Nearly one-half of HIV transmissions appear to be from a partner who had recently acquired HIV infection
Brenner et al., JID 2007
Sexually transmitted infections are increasingly being transmitted among MSM
• Every year, 1-2 MSM per thousand is diagnosed with syphilis

• That’s 46 times the rate among other men

• It’s 71 times the rate among women
In 2000 an estimated 4% of syphilis was among MSM. In 2008, 63% were among MSM. The majority of MSM diagnoses with syphilis are HIV+.

http://www.cdc.gov/std/stats08/trends.htm
Gonorrhea cases have risen sharply among US MSM. Particularly troubling is the rise in antibiotic-resistant gonorrhea, which is concentrated among MSM.
Why do we care about bacterial STIs?

Bacterial STI are readily transmitted through oral sex. Bernstein et al., CID 2009

Having rectal gonorrhea is associated with a 7-9 fold risk in a gay or bisexual man getting HIV. Jin et al., JAIDS 2010, Bernstein et al., JAIDS 2009

Having syphilis is associated with a 4-fold risk in a gay or bisexual man getting HIV. Bernstein et al., JAIDS 2009

Bacterial STIs increase viral load in HIV-positives, making them more likely to transmit HIV to susceptible partners.
Why does HIV transmit so readily among MSM?

1. Likelihood of transmission via anal sex many times higher

2. MSM form denser sexual networks than others do

3. Single-sex scenario as opposed to two-sex

A two-sex population creates transmission bottlenecks

which a one-sex population can bypass through role versatility:
For MSM, biological and network factors make unprotected sex much more risky than it is for heterosexuals--for individuals as well as populations.

In order to have the same HIV prevalence as MSM, heterosexuals would need to have 3 times as many partners as MSM report on average.

Holding all else equal, for HIV transmission to die out, heterosexuals need to average fewer than 3 unprotected sex partners per year. MSM need to average less than 1.
If incidence is going up, does it mean that MSM are taking more risks?

Maybe.

We don’t have good behavioral surveillance like they do in Europe and Canada (but we try).

While the proportion of guys who have unprotected anal sex might be about the same, they’re going about it differently from how they used to.
Serosorting: Seeking partners perceived to be of the same serostatus as oneself, generally with the intention of having unprotected sex with partners of the same serostatus.
Unfortunately, it offers little protection.

In a recent study from Seattle,

MSM who reported unprotected anal sex with an “HIV-negative” partner were no less likely to seroconvert than MSM who reported unprotected anal sex with a partner they knew to be positive.

Viral shedding and risk of transmission are extremely high in the first months after infection.
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<thead>
<tr>
<th>Date</th>
<th>Event Description</th>
<th>Viral Shedding</th>
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<tbody>
<tr>
<td>January</td>
<td>Negative HIV antibody test</td>
<td></td>
</tr>
<tr>
<td>February</td>
<td>Infected by Partner A (HIV+)</td>
<td></td>
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<tr>
<td>March</td>
<td>Unprotected sex with Partner B (HIV-)</td>
<td></td>
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<tr>
<td>April</td>
<td>Unprotected sex with Partner C (HIV-)</td>
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<tr>
<td>May</td>
<td>(HIV-)</td>
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<tr>
<td>June</td>
<td>Positive HIV antibody test</td>
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<tr>
<td>July</td>
<td>// Years later</td>
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- Viral shedding is measured in units of 1,000,000.
Unprotected anal sex among MSM diagnosed with HIV is common, but varies by perception of partner serostatus and position. Crepaz et al., AIDS 2009

About half of HIV-diagnosed MSM have unprotected anal sex. But that sex is often with other HIV+.

About 1 in 8 report unprotected sex with partners they understand to be uninfected, but that sex is often receptive.

About 1 in 6 report unprotected sex with partners whose serostatus they don’t know.

In total, about 1 in 4 have sex with partners they could infect.
Let’s look at it this way.

“If consistently healthy behavioral were easy, I’d be thin.”

-Unnamed CDC researcher
Is there any way I can end on a positive note?

It’s just something I do.
HIV prevention services appear to reduce HIV transmission.

Holtgrave, CID 2007