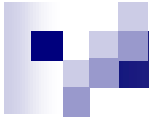


Do criminal HIV disclosure laws reduce
transmission risk?
A mathematical modeling analysis

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November 5, 2007



HIV disclosure laws as a structural intervention

Twenty-three US states have criminal statutes that prohibit HIV-positive persons from engaging in sexual activities without prior disclosure of their HIV status to prospective sex partners.



Goals of the laws

- Decrease HIV transmission
- Protect partner autonomy
- Establish social norms
- Prosecute reckless or malicious conduct

Do these laws encourage HIV-positive serostatus disclosure?

What is the relationship between serostatus disclosure and safer sex practices?



Sexual activities

- Some states require serostatus disclosure prior to a wide range of sexual activities (e.g. MI). MCLS 333.5210 (1988)
- Some states require serostatus disclosure prior to anal, oral, and vaginal intercourse only (e.g. GA). O.C.G.A. § 16-5-60 (1988)
- One state requires disclosure prior to vaginal or anal intercourse only (KA*). K.S.A. § 21-3435 (1992)
- One state law requires serostatus disclosure prior to unprotected anal or vaginal intercourse only (CA*). (Cal H & S Code § 120291) (1998)


*statute also addresses intent



Michigan's statute

... As used in this section, "sexual penetration" means sexual intercourse, cunnilingus, fellatio, anal intercourse, or any other intrusion, however slight, of any part of a person's body or of any object into the genital or anal openings of another person's body...


MCLS 333.5210(1) (1988)



California's statute

... unprotected sexual activity...means insertive vaginal or anal intercourse on the part of an infected male, receptive consensual vaginal intercourse on the part of an infected woman with a male partner, or receptive consensual anal intercourse on the part of an infected man or woman with a male partner.

(Cal Health & Saf Code § 120291) (1998)



Compare 2 approaches

Strict

Positive serostatus disclosure required prior to any sexual activity.

Flexible

Positive serostatus disclosure required prior to unprotected anal or vaginal sex.

What is the risk associated with post-disclosure sexual activities?

What are compliance rates?



Proportion of sexual encounters

- H = high risk sex (unprotected anal or vaginal intercourse) without disclosure
- L = low risk sex (e.g. protected anal or vaginal sex) without disclosure
- D = post-disclosure sexual activities



$$D + L + H = 1$$




Transmission probabilities

R_D , R_L , and R_H are the transmission probabilities associated with post-disclosure sex, low risk sex, and high risk sex.



$$R = DR_D + LR_L + HR_H$$



The effectiveness of an HIV disclosure law depends in part on the relative values of DR_D , LR_L , and HR_H



We assume that post-disclosure sex (D) is less risky than high risk sex (H).

(Marks & Crepaz, 2001)

$$DR_D < HR_H$$


However, we do not know how DR_D or LR_L rank relative to each other.

$DR_D < LR_L < HR_H$ and $LR_L < DR_D < HR_H$
are both plausible.



Post-intervention change in HIV transmission risk

$$R - R^* = (D - D^*)R_D + (L - L^*)R_L + (H - H^*)R_H$$



A disclosure-based intervention is only effective if it reduces risk ($R^* < R$)

$$(D - D^*) (R_H - R_D) > (L - L^*) (R_H - R_L)$$

Approach #1

Strict disclosure laws require HIV-positive serostatus disclosure prior to any sexual activity.



Strict disclosure laws

If $R_D < R_L$

strict laws will decrease risk (R^*) when disclosure (D) is substituted for either low risk (L) or high risk (H) sex.



Strict disclosure laws cont.

If $R_L < R_D$

strict laws will decrease risk (R^*) when disclosure (D) is substituted for high risk sex.

strict laws will increase risk (R^*) when disclosure (D) is substituted for low risk sex (L) only.

strict laws may increase or decrease risk (R^*) when disclosure is substituted for both low risk (L) and high risk (H) sex.

Approach #2

Flexible disclosure laws require HIV-positive serostatus disclosure prior to unprotected anal or vaginal sex.



Flexible disclosure laws

If $R_D < R_L$ or $R_L < R_D$

flexible laws will decrease risk (R^*)
when disclosure (D) is substituted for
either high risk (H) or low risk (L) sex;

however, the magnitude of the risk
reduction depends on R_D , R_L , and R_L



Expected Effects of the Laws

Compared to flexible laws, strict laws may produce greater increases in D but smaller increases in L .

Compared to strict laws, flexible laws may produce greater reductions in H and greater increases in L .



Comparative Effectiveness

- If $R_L < R_D$ then flexible laws are more effective than strict laws
- If $R_D < R_L$ then which law is more effective depends on compliance rates

Comparative Effectiveness

		$RD < RL$		$RL < RD$
Strict law		↓ R		↓ R
Flexible law		↓ R		Depends
More effective		Depends		Flexible