



HIV/AIDS and rape: Modelling predictions of the increase in individual risk of contracting HIV from forced sex

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Background:

- A high proportion of girls, women, and some boys and men, will experience forced sex in their lifetimes
- In conflict & post-conflict - rape, coerced sex and transactional sex common
- Debate about contribution to HIV epidemic

Aim:

- To use mathematical modelling to estimate how much forced sex may increase an individual's risk of HIV acquisition for different scenarios

Methods:

- Literature review of HIV transmission factors
- Develop conflict and comparable non-conflict risk scenarios
- Adapt existing HIV-risk model to incorporate effect of genital injury
- Develop and use analytical equation to estimate relative probability of acquiring HIV in conflict versus non-conflict

Evidence:

- Genital injury disrupts the multi-layered stratified epithelium that protects a woman's reproductive tract
- Literature distinguishes between assaults with single versus multiple sites of trauma
- No estimates of how this may affect 'per-sex-act' probability of HIV transmission

Key assumptions:

- Genital trauma increases 'per-sex-act' risk by multiplicative factor of 1.5 for single sites of trauma, 3 for multiple sites of trauma and 6 for anal rape
- HIV and STI prevalence twice as high among higher risk / violent males versus other males
- No differences between conflict and non-conflict scenarios in probability of high HIV viral load or condom use

Preliminary results:

Conflict scenario	Comparison	Risk ratio
Adult female trades sex with several male members of peacekeeping force (trauma once in every 8 sex acts)	Same number of consensual sex acts with one man from own community	1.5
Adult woman, quarter of sex acts are forced by her highly exposed male partner	Same number of consensual sex acts with male partner who has not been to higher risk situation	1.6
Adult female, forced to have sex by unknown combatant assailants	Same number of consensual sex acts with one partner from own community	4.3
Adult female raped by 3 men at refugee camp and also has low risk male partner that she has 3 consensual sex acts with	Only has 3 consensual sex acts with low risk male partner	5.3
Anal rape of adult fe/male by 3 men at refugee camp, and also has low risk partner of opposite sex that s/he has 3 consensual penile-vaginal sex acts with	Only has 3 consensual penile-vaginal sex acts with the low risk partner	86
Influx of higher exposed population to an area of lower exposure	No population movement, otherwise same behavioural patterns	1.4
Influx of lower exposed population to an area of higher exposure	No population movement, otherwise same behavioural patterns	0.6

Conclusions and implications:

- Even where differences in population HIV prevalence cannot be attributed to mass rape, conflict may result in large increases in an individual's risk of acquiring HIV
- Rape and coercion should be considered in HIV programming

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