Estimated Incidence of HIV Acquisition Due to Prison Rape in the U.S.

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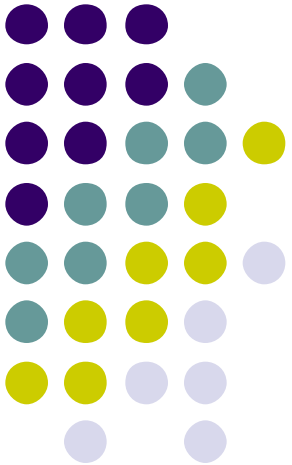
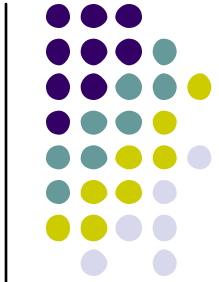
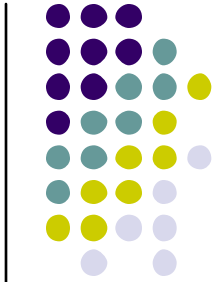


Prison Population (2004)



- 2 million+ adults in US prisons and jails
  - 1.5 million in federal and state prisons
    - 93% men
- Prison inmates disproportionately affected by HIV
  - 1.9% of men and 2.8% of women *known* to have HIV
    - True prevalence likely higher
- Unknown transmission rates *within* prisons

Sexual Assault in Prisons



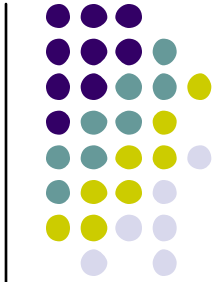
- 1.9% of inmates are raped or seriously assaulted (NIJ, 2004)
- Many inmates are raped repeatedly while incarcerated
- Often, incidents involve multiple perpetrators
- Rape causes physical and psychological trauma
  - Victims cannot “escape” from perpetrator(s)

Prison Rape Elimination Act

- Goal: To eliminate sexual violence in US prisons
- Funding for research and prevention
- PREA expresses concern over potential for HIV transmission:

  "Prison rape undermines the public health by contributing to the spread of [HIV and other STIs]... often giving a potential death sentence to its victims"

HIV Transmission Due to Prison Rape



- Few reported cases
- Incidence unknown
- Scope of problem?
- Mathematical model of incarcerated men
  - Estimate: 1) Likelihood of acquiring HIV if raped
    2) Number of men who acquire HIV from prison rape

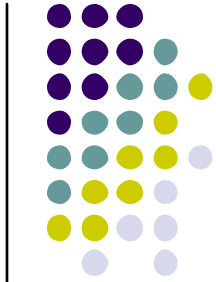
Mathematical Model

- Model focuses on male-male anal rape
- For a particular man, likelihood of acquiring HIV due to rape:

  P(HIV) = P(raped) * P(HIV if raped)

- P(HIV if raped) depends on
  1) # rape incidents
  2) # perps per rape incident
  3) perps' HIV status
  4) probability of transmission per rape act

Mathematical Model



- P_k = Prob of acquiring HIV from k^{th} assailant

  $= \pi \bullet [1 - (1 - \alpha)^n]$

  where: n = #times raped by assailant

  π = prob assailant has HIV

  α = prob of HIV transmission during single act of anal rape

- P(HIV if raped) = $1 - (1 - P_1) \bullet (1 - P_2) \bullet \ldots \bullet (1 - P_m)$

  where: m = total number of assailants

Four Scenarios

- 1) Single incident / single perpetrator (1/6th of men)

  2) Single incident / multiple perpetrators (1/6th of men)

  3) Multiple incidents / single perpetrator (1/3rd of men)

  4) Multiple incidents / multiple perpetrators (1/3rd of men)

  **** 1 to 8 incidents involving 1 to 5 perps

- Scenario probabilities and numbers of incidents and perps derived from Struckman-Johnson et al. (1996)
  - 474 men in midwest prison surveyed
  - > 10% reported anal rape

Results: P(HIV if raped)

Scenario	%	P(HIV if raped)
Single incident / single perp	16.7	1 in 2381
Single incident / multiple perps	16.7	1 in 477
Multiple incidents / single perp	33.3	1 in 319
Multiple incidents / multiple perps	33.3	1 in 98
Overall	*100*	*1 in 206*

Assumes α = 0.02, ¹ = 2.1%

Results: P(HIV) & #Infections

- If 1% of men are raped in prison:

  P(HIV) = 0.0049% (1 in 20,572)

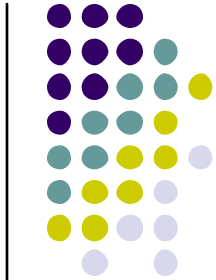
  ==> An incarcerated man faces a 1 in 20,000 risk of acquiring HIV

- Of 1.4 million men incarcerated in US prisons, 68 already have, or will, acquire HIV as a result of being raped
  - Plausible range: 43 to 93

Limitations: Empirical Data

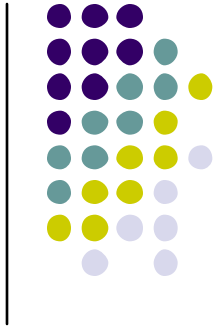
- Official records are unreliable
  - Rape is underreported
    - Fear of reprisal
    - Don't want to be a troublemaker
- Survey studies
  - Generally, small N
  - Methodological challenges
- NIJ has funded several new studies

Result Summary



- Single incident w/ 5 assailants ==> 1 in 500 risk of HIV
- Multiple incidents: risk as high as 1 in 100
- *Men who are raped in prison are at significant risk of acquiring HIV*
- 1 in 20,000 incarcerated men acquire HIV due to prison rape

Conclusions



- # of men who acquire HIV due to prison rape is “relatively small”
- 1 in 20,000 HIV risk is unacceptably high
- Consistent with Prison Rape Elimination Act:

  1 HIV infection is too many

  1 rape is too many