HIV in South Asia: Understanding and Responding to a Heterogeneous Epidemic

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The core challenge for policy makers and economists working on AIDS in Asia

How to convince governments to invest in programs to protect vulnerable groups – injecting drug users, sex workers and men having sex with men
INTRODUCTION

- HIV reached most places at similar time, but spread very differently

- Why so heterogeneous?
HETEROGENEITY OF HIV: CONCURRENT SEXUAL PARTNERSHIPS\(^{(1-2)}\)

- How does HIV infectiousness vary over disease stages and how do acute infection and structure of sexual partnerships influence transmission?

- Sexual partnerships serial – one after another – or concurrent – overlapping
Half of all transmission
Wawer et al, 2005
CONCURRENT PARTNERSHIPS GLOBALLY

Percentage of 15-49 year olds reporting > 1 regular partner in last year

Sources: Cassell et al, 2005

Sources: Halperin et al., 2005

Cote D'Ivoire

Lesotho

Female

Male

Singapore

Sri Lanka

Thailand

Philippines

Kenya

Tanzania

Zambia

Concurrent partnerships globally show varying percentages of 15-49 year olds reporting more than one regular partner in the last year. The graph illustrates these findings for different countries, with Lesotho having the highest percentage for both males and females. The sources for this data are Cassell et al. (2005) and Halperin et al. (2005).
HETEROGENEITY OF HIV: CONCURRENT SEXUAL PARTNERSHIPS

- Concurrent partnerships less common in Asia
- Morris showed that without differences in numbers of partners, HIV transmission 10-fold greater with concurrent partnerships
- South Asia’s epidemics unlikely to be driven by concurrent sexual networks in general population
HETEROGENEITY OF HIV: MALE CIRCUMCISION

- Meta-analyses - circumcised men 50-70% less likely to get HIV
- Ecological studies - male circumcision major factor in variations in Africa’s HIV epidemic
- Randomized trials in Africa - male circumcision reduced HIV transmission by 50-60%
- In Asia, circumcision’s primary importance ISN’T as intervention, but as determinant of epidemic potential
- In highly circumcised countries – Pakistan, Bangladesh and Afghanistan in South Asia and Indonesia and Philippines in East Asia (which have nearly billion people) – heterosexual transmission may be limited (currently below 0.1%) – unless other factors ignite it – which they may
DIVERSITY OF HIV IN ASIA IN 2005

Sources: UNAIDS, 2004

<table>
<thead>
<tr>
<th>Country</th>
<th>HIV Prevalence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bangladesh</td>
<td>0</td>
</tr>
<tr>
<td>Pakistan</td>
<td>0</td>
</tr>
<tr>
<td>Philippines</td>
<td>0.1</td>
</tr>
<tr>
<td>Indonesia</td>
<td>0.1 (Even lower outside Papua)</td>
</tr>
<tr>
<td>China</td>
<td>0.1</td>
</tr>
<tr>
<td>Vietnam</td>
<td>0.3</td>
</tr>
<tr>
<td>PNG</td>
<td>0.6</td>
</tr>
<tr>
<td>India</td>
<td>0.9</td>
</tr>
<tr>
<td>Burma</td>
<td>1.2</td>
</tr>
<tr>
<td>Thailand</td>
<td>1.5</td>
</tr>
<tr>
<td>Cambodia</td>
<td>2.6</td>
</tr>
</tbody>
</table>

High male circumcision

Low male circumcision

Even lower outside Papua
Concurrent sexual partnerships and limited male circumcision fuel and match that lit Southern Africa’s uniquely explosive epidemics – together, these factors may increase HIV transmission 30-fold – explaining much heterogeneity in HIV epidemic potential.
TRANSMISSION DYNAMICS\(^{(1-2)}\)

- Conventional definition - epidemic concentrated until 1%, then generalized - obscures understanding of HIV transmission patterns

- Need revised definition:
  - Concentrated - transmission largely among vulnerable groups and vulnerable group interventions would reduce overall infection

  - Generalized - transmission mainly outside vulnerable groups and would continue despite effective vulnerable group interventions
HIV INFECTION IN HIGH PREVALENCE INDIAN STATES

Sources: India NACO, 2005, US Bureau of the Census, 2005
TRANSMISSION DYNAMICS

- Asian epidemics driven by vulnerable groups
- Asian epidemics further differentiated - ignited by sex or drugs
- Asian epidemics ignited by sex if:
  - Men uncircumcised
  - Many men routinely visit SW (> 10%)
  - SW have many clients (> 20 weekly)
- Thus, epidemics in Thailand, Cambodia, perhaps Burma, most of India (except North East) ignited by sex
- Elsewhere in Asia, IDU the spark plug that ignites sexual transmission, SW the engine that maintains it
- Thus, in Pakistan, Bangladesh, Indonesia, Vietnam, China, IDU fires sexual transmission
- Philippines – no spark plug, little transmission?
- East Asian data shows how IDU can fuel HIV in sex work, fundamentally amplifying epidemic potential
- Pakistan, Bangladesh, Afghanistan – lands of opportunity. Effective IDU programs can dramatically curtail sexual epidemics
NATIONAL ANTENATAL AND POPULATION HIV ESTIMATES

Sources: NAC/NAP, 2001-2003, ORC/MACRO
India relies on ANC data - data emerging from other sources.

ANC and vulnerable group data considerable but uneven, especially in North.

What are we learning globally about the relationship between ANC and population data?

India doing world’s largest ever national population survey in 2006 - until then, the available evidence suggests India’s HIV estimates are credible.
ANC AND POPULATION DATA IN TAMIL NADU

Sources: NACO, 2005, APAC, 2005, Celentano et al, 2004
Overview

- India’s 7 high prevalence states – in South, West and North-East – have many of the detected HIV cases.
- However, they also have much of the existing surveillance.
- National population survey will provide vital data.

Sources: NACO, 2005
HIV IN INDIA

Overview

- HIV in South, West and North-East apparently five-fold higher than rest of India (with earlier surveillance caveats)

Sources: Kumar et al, 2005

NORTH-EAST
SOUTH, WEST
REST

Sources: Kumar et al, 2005
Overview

Two to four-fold more sexual partners in last year in South and West

Sources: Kumar et al, 2005
Overview

- NACO’s district analysis important

- About 50 high prevalence districts (many rural) – have many of the detected HIV cases

- Many high prevalence districts in 3 major clusters:
  - KN-MH corridor
  - Coastal AP
  - North-East

- However, many districts have not data

Sources: NACO, 2005
Recent evidence suggests HIV prevalence has fallen among young ANC and STI clients in South India – and remained low and stable in North India.
HIV PREVALENCE IN INDIAN ANC CLIENTS AGED 15-24

Sources: Kumar et al, 2006
HIV PREVALENCE IN ANC CLIENTS AGED 15-24 BY STATE

Sources: Kumar et al, 2006
HIV IN INDIA\(^{(6-6)}\)

**Summary**

- India’s epidemic containable
- Ignited by IDU in North-West and SW elsewhere
- Requires highly disaggregated analysis and response – focusing on high prevalence districts and blocks
- Likely to be determined in 30-50 key districts in 7 key states
- Significant rural epidemic in Karnataka
In Kathmandu, IDU rates rose rapidly, amplifying SW infection.

Sources: NACO, 2005
Migration and trafficking, especially to Mumbai, amplifies HIV infection - 40% of Nepal’s epidemic linked to migration and trafficking to India.
USING DATA FOR PROGRAMMING: NEPAL

Summary

- Nepal’s epidemic comparable to India’s and more severe than recognized
- Driven by IDU and SW and migrants, particularly SW migrating to Mumbai
- Instability hinders response - innovative partnerships vital
Epidemic largely in Karachi - mainly IDU, also MSM. FSW rates close to zero
Summary

- Molecular epidemiology shows HIV strains in Karachi new – rising fast
- Pakistan today – lessons from Indonesia a decade ago
- Without immediate large-scale, IDU and SW programs, HIV injected into previously resilient, low-prevalence female and male SW networks, fundamentally transforming epidemic character and potential
USING DATA FOR PROGRAMMING: AFGHANISTAN\(^{(1-1)}\)

- Between Iran, Central Asia and Pakistan – IDU rates rising

![Bar chart showing IDU rates rising from <2000 to 4% between 2000 and 2005](chart.png)
HIV rising among IDU, especially in Central region

Sources: NACP, 2004, 2005

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**USING DATA FOR PROGRAMMING: BANGLADESH (1-5)**

- HIV rising among IDU, especially in Central region

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**Graph**: Bars and lines indicating HIV prevalence over rounds II to VI, with the central region showing the highest increase.

**Key**:
- **Central**
- **SE D**
- **NW F1**

**Sources**: NACP, 2004, 2005
USING DATA FOR PROGRAMMING: BANGLADESH\(^{(2-5)}\)

- Remarkable concentration – and heterogeneity

<table>
<thead>
<tr>
<th>Central A2 drug centres</th>
<th>% HIV+</th>
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<tbody>
<tr>
<td>Area 4</td>
<td>2%</td>
</tr>
<tr>
<td>Area 5</td>
<td>8.9%</td>
</tr>
<tr>
<td>Area 6</td>
<td>0%</td>
</tr>
<tr>
<td>Area 7</td>
<td>0%</td>
</tr>
<tr>
<td>Area 8</td>
<td>0%</td>
</tr>
<tr>
<td>Area 9</td>
<td>0%</td>
</tr>
<tr>
<td>Area 10</td>
<td>0%</td>
</tr>
<tr>
<td>Area 11</td>
<td>0%</td>
</tr>
<tr>
<td>Area 12</td>
<td>0%</td>
</tr>
<tr>
<td>Area 13</td>
<td>0%</td>
</tr>
<tr>
<td>Area 14</td>
<td>0%</td>
</tr>
</tbody>
</table>

Sources: NASP, 2004, 20055
Rates among other groups almost zero

Sources: NASP, 2004, 2005

Central  SE  NE  NW
USING DATA FOR PROGRAMMING: BANGLADESH(4-5)

But rates won’t stay zero unless injecting is kept safe

- **FEMALE IDU**
  - % sex worker: 60%
  - % main income sex work: 50%
  - Clients per month: 70

- **HIV AMONG FEMALE IDU**
  - Male IDU: 7.1
  - Female IDU: 4.9

Sources: NASP, 2004, 2005
Summary

- Epidemic highly focused among IDU in defined localities
- Ultra-intensive focus on these areas and large-scale national IDU, SW and MSM programs can prevent further transmission
- Some programs already slowing HIV transmission?
Summary

- Sri Lanka’s epidemic limited

Priorities:

- Keep SW and MSM safe through large-scale, high quality programs
- Establish early warning system to detect growth in IDU and build capacity to manage opiate addiction now
RECOMMENDATIONS:
HIV IN SOUTH ASIA CAN BE CONTAINED

- South Asia’s HIV epidemics can be curbed
- Have sufficient knowledge to tackle South Asia’s epidemics - challenge is to sharpen focus and strengthen implementation
ENCOURAGING TRENDS IN TAMIL NADU AND KOLKOTA

1. ENCOURAGING TRENDS IN TAMIL NADU AND KOLKOTA

2. Sources: NACO, 2005, UNAIDS, 2005

3. The graphs illustrate the trends in various indicators from 1998 to 2003:

   - **ANC**
   - **MSM**
   - **STI**

4. The data shows a general trend of decline, indicating positive changes.

5. The graphs also show trends in unprotected sex and HIV from 1992 to 2004:

   - **Unprotected Sex**
   - **HIV**

6. The data suggests a reduction in unprotected sex and a decrease in HIV cases.

7. Sources: NACO, 2005, UNAIDS, 2005
RECOMMENDATIONS:
TWO-PRONGED APPROACH\(^{(1-1)}\)

- Need two pronged approach
- First, implementing high quality, high coverage programs for major vulnerable groups
- Second, reducing stigma and addressing underlying structural determinants of epidemic
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FIREFIGHTING
AND FIREBREAKS
NOT ONE INFERNO BUT MANY LOCAL FIRES
RECOMMENDATIONS: FOCUS\(^{(1-2)}\)

- Vital to understand heterogeneity of HIV and to focus – dissipation of focus major limitation of HIV programs – no wasted programming
RECOMMENDATIONS: FOCUS\(^{(2-2)}\)

- Thematic focus equally important
- India’s NACO supports more interventions for migrants than SW - yet migrants have lower HIV rates and far fewer partners
- Too few MSM interventions

Sources: NACO, 2005
RECOMMENDATIONS:
GREATER FOCUS ON IDU

Sources: NACO, 2006
RECOMMENDATIONS
GREATER FOCUS ON IDU

- Epidemic potential in North-East hugely influenced by effectiveness of IDU programs today
RECOMMENDATIONS:
GREATER FOCUS ON MSM \((1-1)\)

- MSM third pillar of epidemic and response – considerable MSM activity, increasing HIV rates, especially among *hijra* and MSW

- Yet, too little surveillance, analysis, modeling and programming – only 2% of Indian interventions
RECOMMENDATIONS:
PROGRAM QUALITY AND COVERAGE (1-2)

- Across South Asia, coverage still low – especially among MSM

Sources: NACP, 2005
RECOMMENDATIONS
PROGRAM QUALITY AND COVERAGE

- Combine laser focus on highest prevalence areas and communities with commitment to expand coverage nationwide.

- High coverage of adequate interventions better than low coverage of perfect interventions – small behavior change on large scale better than large behavior change on small scale.
RECOMMENDATIONS
STRUCTURAL INTERVENTIONS

Easier to achieve scale with contextual than individual level interventions - examples include:

- **Legal/policy interventions** - protecting vulnerable groups and undocumented migrants, reducing trafficking, removing risk and stigma from carrying condoms or needles

- **Regulatory interventions** - 100% condom use programs, regulating enterprises to mitigate induced risk

- **Institutional interventions** - institutionalizing safe injecting rooms, detoxification and substitution programs

- **Market interventions** - liberalizing needle or condom sales, subsidized condom, syringe or bleach social marketing programs

- **Voucher programs** - for needles, STI or BBV treatment

- **Normative interventions** – to promote safer sexual and gender norms
RECOMMENDATIONS
RURAL PROGRAMMING\(^{(1-1)}\)

- Growing evidence of rural epidemics – greater focus on rural programming vital
CONCLUSION(1-2)

- HIV in South Asia eminently preventable – 99.6% of South Asians uninfected

- Notwithstanding challenges, South Asia deserves credit for growing commitment and action

- With better use of existing knowledge, focus, implementation and coverage, HIV containable
CONCLUSION(2-2)

- The core challenge for policy makers and economists working on AIDS in Asia
- How to convince governments to invest in programs to protect vulnerable groups – injecting drug users, sex workers and men having sex with men