HIV/AIDS: A thermometer for the future of the poor – India, a case study

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What makes HIV/AIDS unique

- Long asymptomatic infectious period (~10 years)
- Almost always fatal
- No cure or vaccine
- Sex and IV drug use – major transmission routes
- Stigma keeps risky sex and drug use underground
- Youth most vulnerable
- Poor marginalized populations most vulnerable
HIV/AIDS: a devastating modern pandemic

GLOBAL STATUS

2004

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Global status of HIV infection

40 million people living with HIV/AIDS and about 30 million have died as of end 2004

SOURCE: UNAIDS

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Adults and children estimated to be living with HIV/AIDS as of end 2004

Total: 39.4 (35.9-44.3) million

SOURCE: UNAIDS 2004
Estimated number of adults and children newly infected with HIV during 2004

<table>
<thead>
<tr>
<th>Region</th>
<th>Estimated New Infections 2004</th>
</tr>
</thead>
<tbody>
<tr>
<td>Western Europe</td>
<td>21,000</td>
</tr>
<tr>
<td>North Africa &amp; Middle East</td>
<td>92,000</td>
</tr>
<tr>
<td>Sub-Saharan Africa</td>
<td>3.1 million</td>
</tr>
<tr>
<td>Central Asia</td>
<td>210,000</td>
</tr>
<tr>
<td>East Asia</td>
<td>290,000</td>
</tr>
<tr>
<td>South &amp; South-East Asia</td>
<td>890,000</td>
</tr>
<tr>
<td>Latin America</td>
<td>240,000</td>
</tr>
<tr>
<td>Caribbean</td>
<td>53,000</td>
</tr>
<tr>
<td>North America</td>
<td>44,000</td>
</tr>
<tr>
<td>Caribbean</td>
<td>53,000</td>
</tr>
<tr>
<td>South-East Asia</td>
<td>890,000</td>
</tr>
<tr>
<td>Oceania</td>
<td>5,000</td>
</tr>
</tbody>
</table>

Total: 4.9 (4.3-6.4) million

Source: UNAIDS 2004
Estimated adult and child deaths from HIV/AIDS during 2004

Total: 3.1 (2.8-3.5) million

SOURCE: UNAIDS 2004
Fast Spread of HIV in Sub-Saharan Africa, 1984 to 1999

Estimated percentage of adults (15–49) infected with HIV:
- 20.0% – 36.0%
- 10.0% – 20.0%
- 5.0% – 10.0%
- 1.0% – 5.0%
- 0.0% – 1.0%
- Trend data unavailable outside region

SOURCE: UNAIDS 2000
CONSEQUENCES
Africa: 1980-2004
a runaway pandemic
MOST PRODUCTIVE SECTOR (YOUNG ADULTS) LOST

CHANGING LIFE EXPECTANCY

Life expectancy (years)

- High-income OECD
- Latin America and Caribbean
- E Asia and Pacific
- E Europe and CIS
- Arab states
- South Asia
- Sub-Saharan Africa

SOURCE: UN

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HIV, Poor, India
DECREASING LIFE EXPECTANCY; KILLING THE MOST PRODUCTIVE

What is their future?

Source: James Nachtwey

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HIV, Poor, India
Lifetime risk of AIDS death for 15-year-old boys, assuming unchanged or halved risk of becoming infected with HIV, selected countries

Source: Zaba B, 2000 (unpublished data)
UNAIDS 2001
TB and HIV Co-infection

2. Estimated TB/HIV co-infection rates, 1997

Source: WHO
FUTURE
The Second Wave

HIV, Poor, India

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The 2002 NSC/CIA report lists 5 important countries in the next wave

- Nigeria
- Ethiopia
- India
- China
- Russia
PROJECTIONS

Figure 1
High and Low Estimates of Current and Future HIV/AIDS-Infected Adults in Next-Wave Countries, 2002 and 2010

Source: NSC/CIA report 2002
RUSSIA: NIC concluded that at this rate of growth, 10% of all Russians aged 15-49 will be HIV+ by 2010.

Estimated Infections (2004) ~900,000

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Russia: Health and Demographic Crisis

Official HIV+ Numbers: 300,000
Expert Estimates: 900,000

M. Feshbach 05 (WWCS)
HIV/AIDS in Russia.

Population decline by ~ 800,000/year

Life M 60.5
Expectancy F 74.0
HIV Estimates: India

<table>
<thead>
<tr>
<th>Year</th>
<th>Total HIV positive persons</th>
</tr>
</thead>
<tbody>
<tr>
<td>1998</td>
<td>3.5 million</td>
</tr>
<tr>
<td>1999</td>
<td>3.7 million</td>
</tr>
<tr>
<td>2000</td>
<td>3.86 million</td>
</tr>
<tr>
<td>2001</td>
<td>3.97 million</td>
</tr>
<tr>
<td>2002</td>
<td>4.58 million</td>
</tr>
<tr>
<td>2003</td>
<td>5.11 million</td>
</tr>
<tr>
<td>2004</td>
<td>5.134 million</td>
</tr>
</tbody>
</table>

Estimates of 5.134 million based on cumulative 111,608 reported cases!

No estimates of deaths

2004 anomaly due to change in analysis in 2003

Prevalence at Prenatal Clinics
- 0 - 0.20%
- 0.21 - 0.50%
- 0.51 - 1.75%
- No data

Source: Indian National AIDS Control Organisation.

Statistics available for commercial sex workers (CSWs)
Statistics available for injecting drug users (IDUs)
State or union territory boundary

Boundary representation is not necessarily authoritative.
India: Some Key Issues

• About 85% of infections are attributed to sex with sex workers (3-8 million). (soliciting is illegal; status of prostitution is ill defined. Poverty and stigma prevents their development)
• Truck drivers are major transmission vectors (5-10 million)
• Men having sex with men: No national figures (≈ 5%) (Mumbai and Chennai surveillance show high prevalence)
• IV drug use: most focus is on Eastern states (Manipur, …) (IV drug use common amongst menial workers in all cities)
• Accidental spread due to needles/blood is claimed negligible. (2005 study found that of roughly 3-6 billion injections 63% were unsafe and 1/3 carried risk of blood borne infections)
• Migrant workers: about 200 million in agriculture and industry (most stay away from families for months at a time)
• Street kids — kids out of school (about 50 million) Victims of sexual, physical, emotional abuse → Risky behaviors
Vulnerable to HIV/AIDS

• Poor
  – Survival dominates day to day existence

• Illiterate
  – Hard to teach and motivate behavior change

• Marginalized
  – Sex Workers
  – Men having sex with men
  – IV drug users

Risky behavior stays underground
Rich versus Poor

• Health care: do they have access to
  – Testing and counseling
  – Treatment and care
  – Anti-retroviral therapy

• Education matters
  – Prevention messages leading to:
    😐 behavior change
    😞 protection (condoms) (no vaccine)

• Livelihood (freedom to make safe choices)
Two extreme worlds

With ART

Life is not the same or perfect but functional

1995

1999

No ART

Source: James Nachtwey
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HIV, Poor, India
In developing countries HIV/AIDS will not be controlled as an isolated health problem.

We will need to simultaneously address issues of poverty and development.

Intervention will require a long-term holistic approach that builds local leadership and institutions.
The continued spread of HIV/AIDS is an indicator of a much larger problem:

THE VERY FUTURE OF THE POOR, THE ILLITERATE, AND THE MARGINALIZED
Challenge: people living under $2/day

2 billion in 21st century

Resources & Skills

1.5 B people

3 billion in 18th century (population growth is happening here)
Eight key enablers

- Governance – peace, security, equity, civil society
- Population – growth mostly in poor populations
- Health care – will the poor get even the basics?
- Education – will there be quality education for all?
- Jobs – in 21st century want jobs that add value
- Energy – will clean, cheap, copious supply of energy be available as conventional oil and gas production peaks? Global climate change?
- Water – food security, nourishment, disease
- Environment – air and water pollution, severe droughts and storms, erosion, loss of ecosystems, poor depleted soil, and climate change will impact the poor the most.
India: a pivotal strategic region

• 1/6 of world population
• 1/4 of world poverty
• Strategically located
• Democratic, free, secular
• Values education: English and math skills
• Rising middle class

Can India provide adequate resources to 1.1 billion people?
India: Political Landscape

• Few national parties (Congress, BJP, Janta Dal) many regional parties
• Coalition governments: national+regional parties
• Caste, communal, religious card played often
  ❖ Many politicians have criminal records
  ❖ Corruption has become “normal”—a way of life
  ❖ Inflated, inefficient, corrupt bureaucracy

❖ Rich muddle through; Poor are devastated
There are at least 7 characteristic regions in India

Bimaru States

The world sees the Federal Govt – Indians see the State Government

Health Care and education are state subjects

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HIV, Poor, India
Demographics and Population Growth

Population growth can be checked if modern means are provided
## Projected population growth (PRB)

<table>
<thead>
<tr>
<th>Region</th>
<th>2005</th>
<th>2025</th>
<th>2050</th>
</tr>
</thead>
<tbody>
<tr>
<td>N. America</td>
<td>329</td>
<td>386</td>
<td>457</td>
</tr>
<tr>
<td>C.A.&amp; Caribbean</td>
<td>186</td>
<td>235</td>
<td>269</td>
</tr>
<tr>
<td>S. America</td>
<td>373</td>
<td>467</td>
<td>536</td>
</tr>
<tr>
<td>Europe</td>
<td>730</td>
<td>716</td>
<td>660</td>
</tr>
<tr>
<td>Oceania</td>
<td>33</td>
<td>41</td>
<td>46</td>
</tr>
<tr>
<td>Africa</td>
<td>906</td>
<td>1350</td>
<td>1970</td>
</tr>
<tr>
<td>Asia (-China)</td>
<td>2617</td>
<td>3283</td>
<td>3888</td>
</tr>
<tr>
<td>China</td>
<td>1304</td>
<td>1476</td>
<td>1437</td>
</tr>
<tr>
<td>India</td>
<td>1104</td>
<td>1363</td>
<td>1628</td>
</tr>
</tbody>
</table>
## Vulnerable population under 15

<table>
<thead>
<tr>
<th>Region</th>
<th>Population (Millions)</th>
<th>Population under 15 (million)</th>
<th>Vulnerable Pop. under 15 (million)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Africa</td>
<td>861</td>
<td>362 (42%)</td>
<td>~290 (80%)</td>
</tr>
<tr>
<td>Cent. America</td>
<td>144</td>
<td>50 (35%)</td>
<td>~25 (50%)</td>
</tr>
<tr>
<td>South America</td>
<td>358</td>
<td>111 (31%)</td>
<td>~50 (45%)</td>
</tr>
<tr>
<td>West Asia</td>
<td>204</td>
<td>73 (36%)</td>
<td>~30 (40%)</td>
</tr>
<tr>
<td>S&amp;C Asia</td>
<td>1563</td>
<td>580 (37%)</td>
<td>~350 (60%)</td>
</tr>
<tr>
<td>South East Asia</td>
<td>544</td>
<td>180 (31%)</td>
<td>~90 (50%)</td>
</tr>
<tr>
<td>East Asia</td>
<td>1519</td>
<td>334 (22%)</td>
<td>~110 (33%)</td>
</tr>
<tr>
<td>East Europe</td>
<td>301</td>
<td>54 (18%)</td>
<td>~11 (20%)</td>
</tr>
</tbody>
</table>

Source: Population data are from Population Reference Bureau 2003

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Of the 3 billion living on less than $2 (PPP) per day, about a billion are children below age 15 who

- live amidst violence and poverty
- have little or no family supervision
- are not part of the knowledge society
- will not have access to higher education
- lack distinction between right and wrong
- are vulnerable to diseases and poor health

Who will provide them hope and what will keep them from becoming destructive?

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HIV,Poor,India
India: key statistics

- Population (millions): 1104 (2005); 1363 (2025); 1628 (2050)
- Population increase: \( (25-9 \approx 16) \) million per year
- Population below 15 years old: 36% \( \approx 400 \) million
- Rural population: 72% \( \approx 800 \) million

- Births by attendants: 43%
- IMR: 56/1000 live births (CIA, 2005)
- TFR: 3.4 (low 20%) 2.6 (mid 20%) 1.8 (top 20%)

- Vaccinated: 21% (low20%) 41%(mid 20%) 64%(top 20%)

- Most used birth control: Female Sterilization
CAMPAIGN: Reproductive Health & Family Planning

Every man and women should have easy and free access to modern family planning and disease prevention methods (pill, IDU, condom, vaccines, …)

Global Fund: Free “pills” and condoms. <$15B per year
India: Health Care

- Central Budget (MOHFW) → INR 22+53 B ~ $2 billion
  - ARV + care for 5 million HIV+ would require $2 billion
- 75-80% of medical expenses are out of pocket
- *Generic (low cost) medicines are essential*
- Rural India served by about 22,000 Primary Health Care (PHC) centers. Most are dysfunctional
- Malnutrition in children ~ 43%
- Mental health: Essentially unknown
- Growing emphasis on research

Health tourism is a growth industry
India: Education (~4% of GDP)

- 24-25 million children born each year
- About 8 million clear 8th grade (33%)
- About 4 million clear 12th grade (17%)
- Quality
  - ~ 0.5 million sit for college entrance exams
  - About 25,000 get education of international quality in science, engineering, medicine
  - Another 40,000 graduate from foreign universities
- Most State run universities are failing
- Investment in centers and research institutes

Only 60/350 million kids (1990-2005) got high school degrees
Health and Education

• Don’t have enough doctors (500K), nurses (750K), or trained paramedics
• Don’t have enough good teachers. Teaching is becoming less and less rewarding
• Good teachers, doctors, nurses can migrate to wherever they want. Who will serve rural communities? And how?
• Good health care and schools are fast reaching international costs

Poor remain vulnerable to HIV/AIDS, TB, Malaria, Hepatitis, …
Business Landscape

• A new breed of talented, confident, cocky entrepreneurs (post 2002)
  – Very global in outlook and willing to compete at all levels
  – Creating their own infrastructure (electricity, water) decoupled from public works

• India offers better opportunities for small businesses than China

3 Indias: Progressive, “Bimaru”, unstable states
Information Technology

350,000 IT workers have put India on the Map

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PBS 1-800-INDIA
### Exports ($76 billion in 2004)

- Agricultural products
- Textiles and Garments
- Precious and semi-precious stones: $11 billion
- Pharmaceuticals: Generic drugs: $3 billion
- Chemicals
- Engineering goods: $18B ($18B in 2005)
  - Automobile parts
- Software and IT services: $18B (34%↑)
- Diaspora: 25 million → $21.7B remittances
Financial Situation

- Growth 6-7% over the last decade
- Revenues $67B expenditures $104B
- Exports $76B Imports $97B (WTO, 2004)
- Foreign Exchange Reserves ~ $137B
- External debt is large – $125 billion (2005)
- “Bimaru” states are in financial trouble
- Government debt, including borrowings by provincial governments, is 81 percent of GDP

Needs second round of structural changes
Rural India

• About 650,000 villages – 750 million people
• 80% agricultural
• 1st Slogan: Roti, Kapra, Makan
  – (Food, Clothes, Shelter)
• 2nd Slogan: Sadhan, Bijli, Pani
  – (livelihood, electricity, water)

Needs transition strategy as agriculture becomes a business competing in a global economy.
India: Energy a choke point

• In 2004 India consumed 2.4 M barrels a day
• Growth in demand ~ 4% per year
• Oil and gas reserves are small
• Importing 1.6 M barrels a day
  – Cost at $60/barrel = $35 billion
  – Consumes 47% of export earnings of $74 billion
• Growth in use of coal will require strict pollution controls.
Energy use grows with economic development

Source: UN and DOE EIA

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HIV, Poor, India
ENERGY: Need cheap, clean, copious supply!

Peak oil → decline in supply ?? are alternatives in place??

US dollars per barrel
World events

Sumatra production begins
Russian oil exports begin
Growth of Venezuelan production
Fears of shortage in USA
Discovery of Spindletop, Texas
Post-war reconstruction
Loss of Iranian supplies
Sue crisis
Ne
Yom

$15

$30

$60?

1861-1944 US average.
1945-1983 Arabian Light posted at Ras Tanura.
1984-2003 Brent dated.
Ranking of reserves: 2004

- USA 12,6,1
- Russia 8,1,2
- China 11,-,3
- EU -, -, 6
- India -, -, 4
- AT -, -, -

Persian Gulf
- OIL 1,2,3,4,5
- GAS 2,3,4,5,10
- No Coal

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Fast forward to 2020

USA -,-,1
Russia -,-,1,2
China -,-,3
India -,-,4
EU -,-,6
AT -,-,-

Persian Gulf

OIL 1,2,3,4,5
GAS 2,3,4,5,9
No Coal

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Energy Priorities

- Develop Iran, Pakistan, India gas pipeline (USA wants to isolate Iran)
- Develop refinery capacity for ME oil (happening)
- Promote renewables (wind, solar, biomass, small hydro) and distributed generation
- Develop nuclear power with advanced fuel cycle (Thorium)
Water
Soil
Environment
A hidden crisis
Water Poverty Index (WPI)

The information illustrated here represents results of work in progress and must not be taken as definitive.

Water Poverty
(The lower the score the bigger the problem)

Key to WPI components: R - Resources, A - Access, C - Capacity, U - Use, E - Environment

© CEH 2003
Climate change will impact the poor the most

"Simulations of the response to natural forcings alone ... do not explain the warming in the second half of the century"

"..model estimates that take into account both greenhouse gases and sulphate aerosols are consistent with observations over this period" - IPCC 2001

Stott et al, Science 2000

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HIV, Poor, India
India faces severe challenges

- Falling groundwater tables
- Air and water pollution
  - Pesticides, fertilizers, industrial and domestic waste in water
  - Crowded, polluted cities
- Deforestation, loss of ecosystems
- Increasing salinity of soil in irrigated areas
- Overuse of soil – depletion of nutrients
- Growth of cities without adequate resources or infrastructure

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HIV,Poor,India
NEEDS
Thresholds are increasing rapidly

• Nurturing children fit for the 21st century takes very significant investment in time & money
  – Health care and nutrition
  – Education
  – Stable home environment (emotional health)
  – Healthy leisure time activities

• Infrastructure → job creation

• Access to energy and potable water

Poor cannot cross them without significant help
GOAL: Providing each person with a full complement of childhood immunizations, health care, adequate daily food, and good education.
Deploy enabling Technologies

• Medicines and vaccines
  – Global jackpot fund for essential medicines and vaccines
• Cheap, clean, copious sources of energy
• Quantity and quality of water
Migration and Reinvestment

• Migration has created a global Indian community
• This community has skills, capital, entrepreneurship
• Many are keen to help
• Need to figure out a way to also engage them outside of IT (in poverty reduction)
• Help develop local leadership

The number of good NGOs make India a hopeful case!
Scenario Under Business-as-Usual
Eight Economic Zones of about 400M “global” people
The more we ignore the needs of the poor and marginalized, the more we empower the despots, the sharks and the barracudas!
Impediments to development: Sharks and Barracudas come in many guises

- Despotic, corrupt governments
- National and transnational criminals
- Fanatics and terrorists
- Exploitative multinationals
Confront criminal organization and rogue economies

- Alcohol (*major impediment to development*)
- Tobacco
- Drugs
- Weapons
- Money laundering
- Corporate/government corruption
- Illegal trade in resources
HEROIN THREAT

The golden crescent (~90%)

The golden triangle (~5%)

India will increasingly be targeted by drug cartels as prosperity grows

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In the absence of healthy leisure time activities people gravitate towards

- Shallow television
- Gambling
- Alcohol and drugs
- Risky sex

HIV/AIDS

Need education and meaningful jobs
HIV,Poor,India

Campaign: Ban international trade in cigarettes

• Recognized health hazard
• Growth in smoking predominately in developing countries
• Advertisements target the youth
• Savings in health care costs will offset profit
• Moral victory for developed nations
Conclusion

500 million Indians need health care, education, job skills, energy and potable water to develop