THE EPIDEMIOLOGY OF HIV/AIDS IN SUB SAHARAN AFRICA

ASAP- 06 November 2007

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BUILDING A HEALTHY NATION THROUGH RESEARCH
Adult (15-49) HIV prevalence rate (%), 1985
Adult (15-49) HIV prevalence rate (%), 2005

Adult prevalence rate
- 15.0 - 34.0%
- 5.0 - <15.0%
- 1.0 - <5.0%
- 0.5 - <1.0%
- 0.5 - <1.0%
Adults and children estimated to be living with HIV, 2006

Total: 39.5 (34.1 – 47.1) million
Over 11 000 new HIV infections a day in 2006

- More than 95% are in low and middle income countries
- About 1500 are in children under 15 years of age
- About 10 000 are in adults aged 15 years and older of whom:
  - almost 50% are among women
  - about 40% are among young people (15-24)
The number of people living with HIV has risen from around 8 million in 1990 to nearly 40 million today, and is still growing. Around 63% of people living with HIV are in sub-Saharan Africa.

Ref: [www.avert.org/worldstats.htm](http://www.avert.org/worldstats.htm)
<table>
<thead>
<tr>
<th>Region</th>
<th>Adults &amp; children living with HIV/AIDS</th>
<th>Adults &amp; children newly infected</th>
<th>Adult prevalence*</th>
<th>Deaths of adults &amp; children</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sub-Saharan Africa</td>
<td>24.7 million</td>
<td>2.8 million</td>
<td>5.9%</td>
<td>2.1 million</td>
</tr>
<tr>
<td>North Africa &amp; Middle East</td>
<td>460,000</td>
<td>68,000</td>
<td>0.2%</td>
<td>36,000</td>
</tr>
<tr>
<td>South and South-East Asia</td>
<td>7.8 million</td>
<td>860,000</td>
<td>0.6%</td>
<td>590,000</td>
</tr>
<tr>
<td>East Asia</td>
<td>750,000</td>
<td>100,000</td>
<td>0.1%</td>
<td>43,000</td>
</tr>
<tr>
<td>Oceania</td>
<td>81,000</td>
<td>7,100</td>
<td>0.4%</td>
<td>4,000</td>
</tr>
<tr>
<td>Latin America</td>
<td>1.7 million</td>
<td>140,000</td>
<td>0.5%</td>
<td>65,000</td>
</tr>
<tr>
<td>Caribbean</td>
<td>250,000</td>
<td>27,000</td>
<td>1.2%</td>
<td>19,000</td>
</tr>
<tr>
<td>Eastern Europe &amp; Central Asia</td>
<td>1.7 million</td>
<td>270,000</td>
<td>0.9%</td>
<td>84,000</td>
</tr>
<tr>
<td>Western &amp; Central Europe</td>
<td>740,000</td>
<td>22,000</td>
<td>0.3%</td>
<td>12,000</td>
</tr>
<tr>
<td>North America</td>
<td>1.4 million</td>
<td>43,000</td>
<td>0.8%</td>
<td>18,000</td>
</tr>
<tr>
<td>Global Total</td>
<td>39.5 million</td>
<td>4.3 million</td>
<td>10.9%</td>
<td>2.9 million</td>
</tr>
</tbody>
</table>

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Estimated number of people living with HIV and adult HIV prevalence

**Global HIV epidemic, 1990–2005***

<table>
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<tr>
<th>Number of people living with HIV (millions)</th>
<th>% HIV prevalence, adult (15–49)</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1" alt="Graph" /></td>
<td><img src="image2" alt="Graph" /></td>
</tr>
</tbody>
</table>

**HIV epidemic in sub-Saharan Africa, 1985–2005***

<table>
<thead>
<tr>
<th>Number of people living with HIV (millions)</th>
<th>% HIV prevalence, adult (15–49)</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image3" alt="Graph" /></td>
<td><img src="image4" alt="Graph" /></td>
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</tbody>
</table>

*Even though the HIV prevalence rates have stabilized in sub-Saharan Africa, the actual number of people infected continues to grow because of population growth. Applying the same prevalence rate to a growing population will result in increasing numbers of people living with HIV.*
HIV prevalence (%) among pregnant women attending antenatal clinics in sub-Saharan Africa, 1997/98–2004

**Southern Africa**

- South Africa
- Mozambique
- Zimbabwe
- Swaziland

**Eastern Africa**

- United Republic of Tanzania
- Ethiopia
- Kenya

**West Africa**

- Burkina Faso
- Côte d'Ivoire
- Ghana
- Senegal

*Note: Analysis restricted to consistent surveillance sites for all countries except South Africa (by province) and Swaziland (by region)*

Sources: Ministry of Health (Mozambique); Department of Health (South Africa); Ministry of Health and Social Welfare (Swaziland); Ministry of Health and Child Welfare (Zimbabwe); Adapted from Asamoah-Odei, et al. HIV prevalence and trends in sub-Saharan Africa: no decline and large subregional differences. Lancet, 2004 (Ethiopia); Ministry of Health—National AIDS/STD Control Programme (Kenya); Ministry of Health (United Republic of Tanzania); Conseil national de lutte contre le sida et les IST (Burkina Faso); Centers for Disease Control and Prevention (CDC)—GAP—Côte d’Ivoire (Côte d’Ivoire); Ghana Health Service (Ghana); Conseil National de Lutte Contre le SIDA (Senegal).
Characteristics of epidemic in Sub Saharan Africa

Spread not confined to high risk groups - generalized
Heterosexual spread
Feminized epidemic
Gender issues

Heterogeneity across region and within regions
Urban vs rural, north- south

High risk groups e.g.. MSM, IVDU exists and must not be underestimated.
Why is epidemic so severe in SSA?

- Key drivers of epidemic: “High levels of multiple and concurrent sexual partnerships by men and women with insufficient consistent, correct condom use, combined with low levels of male circumcision” [SADAC think tank, May 2006]
- Conclusive evidence of association between lack of male circumcision and HIV
- may explain 5 fold difference in HIV rates in southern and western Africa
- Circumcision uncommon in India or Europe.
- African men typically do not have more sexual partners than men elsewhere [Wellings et al, Lancet 2006]
- Men and women in Africa report similar if not fewer numbers of lifetime partners than do heterosexuals in many western countries
Percentage of 15-49 year olds reporting >1 regular partner in last year

Sources: M. Carael 1995; Halperin and Epstein 2004
ACUTE INFECTION AND CONCURRENCE

Disease stage

Risk of transmission

Seroconversion (Acute infection)

Asymptomatic infection

Months to years HIV progression (falling CD4 count)

AIDS

Concurrence: Lesotho 2002 Reproductive Health Survey

percent of sexually active 12-54 year old males reporting two or more partners in the past four weeks

percent of sexually active 12-49 year old females reporting two or more partners in the past four weeks
Although most African women in concurrent partnerships are not sex workers, such relationships include a powerful element of socio-economic exchange related to gender and income inequality, sexual culture, poverty.

Polygamy is common in north and west Africa and in other Muslim regions but HIV infection rates are lower.

- West Africa and nearly all Muslim countries – men are circumcised
- Large scale heterosexual concurrency networks can only emerge if a significant proportion of women are engaging in multiple long term relationships. In Muslim societies women’s sexual behaviour is strictly monitored.

Differing patterns of sexual behaviour and resulting differences in sexual networks have implications for HIV prevention programmes.
Percentage of young people aged 15–24 reporting the use of a condom during sexual intercourse with a non-regular partner, Sub-Saharan Africa, 2001–2005

Countries with date of survey indicated

- Benin 2001
- Botswana 2001
- Burkina Faso 2003
- Cameroon 2004
- Chad 2004
- Ghana 2003
- Guinea 2005
- Kenya 2003
- Lesotho 2004
- Madagascar 2003
- Malawi 2004
- Mali 2001
- Mozambique 2003
- Nigeria 2003
- Rwanda 2004
- Senegal 2005
- United Republic of Tanzania 2003
- Uganda 2004
- Zambia 2003

Sources: Demographic Health Surveys; HIV/AIDS Indicator Surveys (2001-2005)
CONDOM USE IN LONGER VS. SHORTER RELATIONSHIPS

Nigeria: Percentage of respondents who ‘always’ use condoms ...

- 67% with casual partners
- 33% with a boyfriend/girlfriend
- 2% with a spouse

Just as some drugs don’t cross the blood brain barrier; we have a very difficult time getting condoms to cross the marriage and relationship barriers.

Sources: D. Stanton 2006; Van Roosmalen et al. AIDS Educ and Prev. 2001
• Consistent use of condoms has been effectively promoted

• In gay communities of Australia, San Francisco and even Uganda, it was challenge for people in ongoing long term relationships to use condoms consistently

• In southern Africa long term relationships are often the ones in which HIV transmission occurs

• UNAIDS concluded that although condoms are highly effective when used correctly and consistently, no clear examples have emerged yet of a country that has turned back a generalized epidemic by means of condom promotion
• Highly generalized HIV epidemic in southern and parts of east Africa is uniquely severe

• Elsewhere HIV transmission is associated with high risk activities
• Although HIV has been present for nearly 2 decades in Asia, Latin America and Europe, extensive heterosexual spread has seldom occurred in these regions

• Decline in HIV in some parts of Eastern Africa

• Southern Africa the rates remain extremely high

• Southern Africa houses < 2% of the global population but has at least 1/3 of all HIV infected people

• South Africa, Swaziland, Botswana and Western Kenya range 20-35% infections rates in adults
Conclusions and implications for prevention in Sub-Saharan Africa

• STI treatment is important public health measure, the impact on preventing HIV transmission, especially in regions with high HIV prevalence, more generalized epidemics, is more likely to be minimal

• Expanded and improved male circumcision services will need to be placed within a broader framework of male reproductive and sexual health. Importance of correct message

• Any HIV prevention strategy to address partner reduction and faithfulness should take place within a wider campaign to address gender issues and to raise the status of women generally-

• E.g. female controlled prevention: female condom, microbicides
Thank you

**References:**
Demographic Health Surveys; HIV/AIDS Indicator Surveys (2001-2005)
UNAIDS (2005). Resource needs for an expanded response to AIDS in low- and middle-income countries
UNAIDS: 2006 report on the global AIDS epidemic
Estimated number of people in need of antiretroviral therapy in Africa, as of December 20
CONCURRENT PARTNERSHIPS GLOBALLY

[Bar charts showing comparison of gender perceptions in various locations such as Rio de Janeiro, Thailand, Sri Lanka, Singapore, Manila, Lusaka, Tanzania, Lesotho, Kenya, Cote d'Ivoire, and CAR.]
• Morris and Kretzschmar used mathematical modeling to compare the spread of HIV in two populations

• Although the total number of sexual relationships were similar in both populations, HIV transmission was more rapid with long term concurrency: epidemic was 10 times greater

• Effect measures by Morris and Kretzschmar was due to the impact of sexual networking alone

• Now established that viral load, and infectivity is much higher during the acute infection window period

• Sexual networking + the acute infection spike in viral loads => 1 HIV infected person in network of concurrent relationships = risk to all in the network

• Serial monogamy traps the virus in a single relationship for years => when a new partner engaged the acute infection period of unusually high HIV infectivity has usually passed