STRATEGIES TO PREVENT HIV/AIDS

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### Global summary of the AIDS epidemic, December 2007

#### Number of people living with HIV in 2007

<table>
<thead>
<tr>
<th>Category</th>
<th>Total</th>
<th>Adults</th>
<th>Women</th>
<th>Children under 15 years</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>33.2 million [30.6 – 36.1 million]</td>
<td>30.8 million [28.2 – 33.6 million]</td>
<td>15.4 million [13.9 – 16.6 million]</td>
<td>2.1 million [1.9 – 2.4 million]</td>
</tr>
</tbody>
</table>

#### People newly infected with HIV in 2007

<table>
<thead>
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<th>Total</th>
<th>Adults</th>
<th>Children under 15 years</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2.5 million [1.8 – 4.1 million]</td>
<td>2.1 million [1.4 – 3.6 million]</td>
<td>420 000 [350 000 – 540 000]</td>
</tr>
</tbody>
</table>

#### AIDS deaths in 2007

<table>
<thead>
<tr>
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</tr>
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<tbody>
<tr>
<td></td>
<td>2.1 million [1.9 – 2.4 million]</td>
<td>1.7 million [1.6 – 2.1 million]</td>
<td>290 000 [270 000 – 320 000]</td>
</tr>
</tbody>
</table>
Adults and children estimated to be living with HIV, 2007

Total: 33.2 (30.6 – 36.1) million
Estimated number of adults and children newly infected with HIV, 2007

- **Western & Central Europe**: 31,000 (19,000 – 86,000)
- **Middle East & North Africa**: 35,000 (16,000 – 65,000)
- **Sub-Saharan Africa**: 1.7 million (1.4 – 2.4 million)
- **Eastern Europe & Central Asia**: 150,000 (70,000 – 290,000)
- **North America**: 46,000 (38,000 – 68,000)
- **Caribbean**: 17,000 (15,000 – 23,000)
- **Latin America**: 100,000 (47,000 – 220,000)
- **East Asia**: 92,000 (21,000 – 220,000)
- **South & South-East Asia**: 340,000 (180,000 – 740,000)
- **Oceania**: 14,000 (11,000 – 26,000)

**Total**: 2.5 (1.8 – 4.1) million
Over 6800 new HIV infections a day in 2007

• More than 96% are in low and middle income countries

• About 1200 are in children under 15 years of age

• About 5800 are in adults aged 15 years and older of whom:
  — almost 50% are among women
  — about 40% are among young people (15-24)
MODES OF TRANSMISSION

• Blood

• Sexual activities

• Mother to child
DETERMINANTS OF TRANSMISSION FROM AN INFECTED PERSON

- Duration of infection/stage of disease
- Risk of transmission per sexual act
  - Viral RNA level
  - Presence/absence of concurrent STD and other infections
  - Condom use
- Circumcision status
- Partner exchange rate
  - Mixing pattern
  - Patterns of sexual behavior (anal, vaginal, etc.)
  - Injection equipment sharing
TARGET GROUPS FOR INTERVENTION STRATEGIES

- Men who have sex with men
- Injection drug users
- Promiscuous heterosexuals
- Health care workers
- Biomedical laboratory workers
- Blood/plasma donors
- Pregnant women in high-risk populations
- Youth 13-25 years
Impact of the HIV/AIDS Epidemic on Developing Countries

On the Economic and Political Well-Being of the Nation

• Alteration of the producer:dependent ratio
• Increased health care costs
• Social impact
• Political impact
Impact of the HIV/AIDS Epidemic in Developing Countries

Alteration of the Producer:Dependent Ratio

- Decreased productivity due to illness
- Removal of producers by death
- Increased number of dependents:
  - Sick babies
  - Increased number of orphans
Impact of the HIV/AIDS Epidemic in Developing Countries

Increased Health Care Costs

- Diversion of funds from other urgent health problems
- Issues and costs of care and hospitalization
Impact of the HIV/AIDS Epidemic
On the Individual

• Uncertain future
• Contemplating painful death
• Stigmatization and social isolation
• Loss of employment
• Limited access to health care
• Loss of self-esteem
Impact of the HIV/AIDS Epidemic

On the Family

- Potential infection of spouse and children
- Loss of economic support of family
- Ostracism and social isolation
- Children become orphans
Impact of the HIV/AIDS Epidemic On Society

• Loss of productive segment of society
• Increased number of dependents
• Breakdown of family structure
• Sense of fear and distrust
Impact of the HIV/AIDS Epidemic

Political impact

- Political instability
- Increased dependency on rich nations
NEED TO RETURN TO PUBLIC HEALTH PRINCIPLES

• Discard concept of exceptionalism
• Primary responsibility to protect the uninfected
• Promote testing
• Prevent transmission
• Treat infected
STRATEGIES TO PREVENT HIV INFECTION

*Rapid Testing*

1. Immediate results
2. Requires confirmation, if informing patient
STRATEGIES TO PREVENT HIV INFECTION - BLOOD

1. Reduced use of whole blood
2. Screening of blood donors
3. Screening of blood donations
4. Processing of blood products
5. Institutionalization of routine safety procedures for health workers and biomedical laboratory technicians
STRATEGIES TO PREVENT HIV INFECTION – INJECTION DRUG USERS

1. Prevent drug use
2. Reduce needle sharing
3. Use of bleach or boiling
4. Needle exchange programs
5. Drug replacement programs (e.g., methadone)
6. Health education/behavioral intervention for intravenous drug users
7. Improve access to and acceptability of testing
8. Condom promotion
STRATEGIES TO PREVENT HIV INFECTION - SEXUAL ACTIVITIES (1)

- Health education/behavioral intervention
- Increase knowledge of HIV/AIDS at an early age
- Eliminate/reduce high-risk practices
- Promote use of condoms with every intercourse
- Promote monogamy/celibacy
- Reduce opportunities for promiscuity (e.g., close bath houses, reduce number of partners, avoid anonymous partners)
STRATEGIES TO PREVENT HIV INFECTION - SEXUAL ACTIVITIES (2)

- Regular screening and treatment for sexually transmitted diseases
- Use of syndromic approach and counseling to treat STDs
- More acceptable STD treatment facilities
- Reduce number of partners
STRATEGIES TO PREVENT HIV INFECTION - SEXUAL ACTIVITIES (3)

• Routine testing of sex workers and persons at risk for STDs and HIV, with treatment for those infected
• Regulation of commercial sex
• Improve access to and acceptability of testing
• Voluntary partner notification
• Promote circumcision
STRATEGIES TO PREVENT VERTICAL HIV INFECTION (1)

Routine testing
- Premarital testing
- Women in high-risk groups and wives of high-risk partners
- Pre-pregnancy testing
- Antenatal
- Counseling

Antiretroviral treatment
- Prenatal
- Postnatal
STRATEGIES TO PREVENT VERTICAL HIV INFECTION (2)

Exclusive breast-feeding for six months
Prophylaxis of infant during breast-feeding
STRATEGIES TO PREVENT AIDS (1)

- Developed countries
  - Initiate HAART
    - CD4⁺ cell <250, regardless of symptoms
    - Symptoms of HIV infection present regardless of CD4⁺ cell level
    - CD4⁺ cell >250, viral load >30,000
    - Diagnosis of AIDS
    - Monitoring of HAART response and development of resistance
STRATEGIES TO PREVENT AIDS (2)

- Developing countries
  - Political commitment
  - Testing and post-test counseling
  - Provision of drugs
  - Development of treatment infrastructure
  - Expansion and training of treatment personnel
  - Education on need for adherence to drug regimen
  - Development of inexpensive, low-tech surrogate tests for monitoring disease course
TARGET POPULATIONS

- Vulnerable groups
  - Poor
  - Minorities
  - Men who have sex with men
  - Injection drug users
  - Adolescents
  - In utero/breast-feeding infants (mothers)

- Schoolchildren

- Women

- Others specific to particular areas; e.g., recipients of blood in rural areas of developing countries
INTERVENTION STRATEGIES

- Educational approaches
- Behavioral (theory-based) approaches
- Harm reduction
- Community intervention
EDUCATIONAL APPROACHES

- School-based
- Media: newspapers, posters, radio/TV
- Internet
- Health professionals
  - Train the trainers
    - Researchers
    - Administrators
    - Health care providers
ROLE MODELS

- Formal leaders
- Popular opinion leaders
- Informal leaders
  - Recruitment
  - Training
COMMUNITY INTERVENTION

• Have community accept responsibility and initiate appropriate intervention activities

• Recruit community leaders, teachers, health workers, peer leaders, media

• Develop appropriate intervention strategies collaboratively with community
HARM REDUCTION

- Condoms (promotion and social marketing)
- Needle exchange
- Methadone and other oral drug alternatives
Key Elements for Successful Intervention (1)

- Mobilization of political will and commitment (as expressed by Indian Minister of Health)
- Good surveillance
- Learn and adapt from past experiences
- Unified national planning
- Multisectoral response
- Rapid implementation
Key Elements for Successful Intervention (2)

- Focused intervention; e.g., involve marginalized and high-risk groups
- Assure access to intervention tools; e.g. condoms, testing, drugs
- Early education
- Community involvement
- Promote circumcision
  - Infants
  - Adult males
Key Elements for Successful Intervention (3)

• Reduce barriers to intervention
  • Address restrictive cultural norms (e.g. refusal to acknowledge sexuality)
  • Stigmatization
  • Promote testing (opt out)

• Treatment
  • Adults
  • Pregnant women

• Development of effective vaccine
Key Elements for Successful Intervention (4)

- Development of an effective microbicide
  - Issues of testing i.e. mandatory condom use
  - Recognition of risk by participants
  - Adherence
  - Drug resistance for anti-HIV microbicides
  - Irritation of vaginal mucosa
    - Same microbicide for low risk and high women?
BARRIERS TO HIV/AIDS CONTROL (1)

- Status of women
- Low condom acceptance (esp. non-commercial sex)
- Emphasis (& $s$) on treatment, not prevention
- Dependence on external support
- Long-term sustainability of external support
- Low awareness/acceptance of vulnerability (women/youth)
- Low acceptance of testing (emphasis on “opt-in” and individual rights)
BARRIERS TO HIV/AIDS CONTROL (2)

- Stigma (risk groups, HIV-infected, those seeking testing)
- High proportion of uncircumcised men
- Low literacy rates
- Few female-controlled prevention strategies (e.g. microbicides)
- Vaccine unlikely in the near future
EDUCATION IS ESSENTIAL

BUT INSUFFICIENT
CDC: “New Strategies for a Changing Epidemic”

- HIV testing as a part of routine medical care
- New models for testing outside medical settings (e.g., community setting)
- Work with HIV-positive individuals to prevent secondary spread
- Promote routine testing of pregnant women and infants of untested mothers
EVALUATION OF INTERVENTION STRATEGIES

- Are the appropriate risk groups and areas targeted?
- Is the intervention strategy culturally/ economically appropriate for the specific risk group/area?
- How is effectiveness of intervention strategies measured?
- Is the sentinel surveillance system a part of the evaluation scheme?
- Has there been an impact?
- Is the strategy cost-effective?
- Can the intervention be scaled up?