Global HIV/AIDS Pandemic
Epidemiology and Health Policy

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Tropical Medicine and Global Health Course - IDPT 8013
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Outline and Objectives

• Epidemiology of the global HIV/AIDS pandemic
• Selected health policy issues related to HIV/AIDS, with a focus on resource-limited settings
• ICAP as an example of a large international program providing care and treatment in high-burden countries
Bush Sends Troops To West Nile

WASHINGTON, DC—Vowing to “exact justice for the taking of innocent American lives,” a determined and defiant President Bush deployed more than 14,000 ground troops to the West Nile Monday.

“My fellow Americans, an enemy from overseas has attacked us in our own land, waging biological warfare against us on our home soil,” Bush said in a nationally televised speech from the Oval Office. “We must send a strong message to our enemies in the West Nile region that this virulent aggression against America will not go unpunished; it will not stand.”

Bush’s decision to deploy troops came on the heels of three more West Nile virus deaths over the weekend—one in Louisiana and two in Illinois—brining the national death toll to 51.

“These cowards want to bring down our very way of life,” Bush said. “They have sought to rob us of our ability to leave the house without repellent. But what they did not count on is the tremendous spirit and resolve of the American people. No one, be they man or mosquito, will dictate what we put or don’t put on our skin for protec-

Above: Bush outlines the details of Operation Deep Desert Off! to reporters.
The World

AIDS in Africa: The Silent Stalker

By DONALD G. McNEIL Jr.

Johannesburg

The earliest confirmed case of infection with HIV-1, the virus that causes most AIDS cases around the world, is in a blood sample taken from an African man in 1959, in what was then the Belgian Congo.

Earlier this year, D.N.A. analysts at the Aaron Diamond AIDS Research Center in New York, comparing that sample with others and calculating mutation rates, estimated that the killer virus came into existence sometime in the late 1940's or early 1950's.

If that's the case, what happened? Where did it go? How could the virus, which is now threatening to kill a quarter of some African countries, have gone virtually unnoticed for 20 years — and then emerged in America, decimating gay men and hemophiliacs in the late 70's before starting on a ruthless march

the virulent strain that has been killing people from central Africa to San Francisco to Bangkok.

But H.I.V.-1 didn't necessarily jump to humans as a killer. Some scientists believe a weak early form was caught by European colonists as early as 1900, and one scientist blames it for an outbreak of P.C.P. pneumonia, which is associated with AIDS, in Danzig, Germany, in 1939. Others are skeptical.

Somewhere, probably west of Lake Victoria, and sometime, possibly in the 1940's, H.I.V.-1 mutated inside a human host into an attacker of T-cells and rapid destroyer of immune systems.

It must have spread very slowly at first, in rural areas. It certainly was not killing large numbers of Africans.

"If the disease had been widespread in the 1950's and 1960's, there were enough experienced clinicians in Africa to have noticed something like that going on," said Dr. Anne Buyé, an epidemiologist with the Institute for Tropical Medicine
Unique Aspects of the HIV/AIDS Pandemic

• Unprecedented growth in medical knowledge, with fortuitous timing related to advances in biotechnology
• Extraordinary funding for HIV/AIDS services, research, and prevention
• “AIDS exceptionalism” related to categorical funding, public health approaches to control, policy development
• Political activism by PLWAs, resulting in change in patient and consumer advocacy in industrialized countries
• Media attention unlike any other disease entity with public concern equal to or greater than other “plagues”
Adults and Children Estimated to be Living with HIV - 2009

Total: 33.3 million [31.4 million – 35.3 million]
Global HIV/AIDS Estimates
Adults and Children - 2009

- People living with HIV: 33.3 million
- New HIV infections in 2009: 2.6 million
- Deaths due to AIDS in 2009: 1.8 million
- Cumulative number of deaths: 39 million

UNAIDS Global Report, 2010
Global Prevalence of HIV - 2009

UNAIDS Global Report, 2010
HIV Prevalence in Adults in sub-Saharan Africa, 1986-2001

- 0 – 1%
- 1 – 5%
- 5 – 10%
- 10 – 20%
- 20 – 39%
- Trend data unavailable
- Outside region
Median HIV prevalence among women (15-49 years) attending antenatal clinics in consistent sites in southern African countries, 1998-2006
Changes in Incidence of HIV infection - Selected Countries, 2001-2009

UNAIDS Global Report, 2010
The Impact of HIV

- **33 million** people living with HIV including **2 million children**
- **Every day**, 7000 persons are newly infected, including 1000 children; five new infections **every minute**
- Nearly **six of ten individuals** in urgent need of lifesaving HIV/AIDS treatment
- AIDS is the **6th leading cause of death** worldwide and **leading cause of death** in sub Saharan Africa
- **15 million children** < 18 years of age have been **orphaned** as a result of HIV/AIDS
- In **South Africa**, AIDS is responsible for **43.7% of all maternal deaths**
- In most severely affected countries, HIV is the cause of **a third of under 5-year childhood deaths**

UNAIDS AIDS and Global Health, 2009
Selected HIV-related Health Policy Issues
Colorado, 1982 - present

• Concerns about transmission of mysterious disease and discrimination against HIV-infected persons

• Confidential vs anonymous HIV counseling and testing

• Named HIV reporting to state health department for enhanced surveillance and partner notification

• Activism and advocacy by PLWAs, demands for adequate funding for clinical care and research

• HIV-infected health care workers, potential for transmission to patients via procedures

• Funding for expensive, life-saving ARV medications
Selected HIV-related Health Policy Issues
Resource-limited Settings, 1983 - present

- AIDS highlights disparities, discrimination and stigma; recognition of health as a human rights issue
- Voluntary counseling and testing; knowledge of serostatus to foster safe behaviors, access care
- Prevention of mother-to-child transmission as first priority for use of scarce antiretroviral therapy (ART)
- 3X5 (3 million on ART by 2005) – WHO public Health approach to treatment
- Multiple prevention strategies: Behavioral, condoms, microbicides, circumcision, pre-exposure prophylaxis
- Test and treat, Treatment as prevention
Towards Universal Access

- HIV testing and counseling
- Health sector interventions for HIV prevention
- Treatment and care for people living with HIV
- Scaling up services for women and children
- Beyond 2010

WHO/UNIADS Report, 2010

Note: For comparison with data for 1999 and later years, data for 1987–1998 were modified to account for ICD-10 rules instead of ICD-9 rules.
HIV/AIDS Deaths and Number of People using Antiretroviral Therapy, by region - 2001

Source: WHO/UNAIDS, 2002
SCALING UP
ANTIRETROVIRAL THERAPY IN
RESOURCE-LIMITED SETTINGS

GUIDELINES FOR A
PUBLIC HEALTH APPROACH

EXECUTIVE SUMMARY

World Health Organization
April 2002
"I ask the Congress to commit $15 billion over the next five years, including nearly $10 billion in new money, to turn the tide against AIDS in the most afflicted nations of Africa and the Caribbean."

State of the Union Address
January 29, 2003
The President’s Emergency Plan for AIDS Relief

U.S. Five-Year Global HIV/AIDS Strategy

U.S. President’s Emergency Plan for AIDS Relief

Number of Individuals Directly Supported on Antiretroviral Treatment as of September 30, 2010

<table>
<thead>
<tr>
<th>Country</th>
<th>Number of individuals on antiretroviral treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Botswana</td>
<td>12,200</td>
</tr>
<tr>
<td>Cambodia</td>
<td>7,300</td>
</tr>
<tr>
<td>China</td>
<td>5,600</td>
</tr>
<tr>
<td>Côte d’Ivoire</td>
<td>61,200</td>
</tr>
<tr>
<td>Democratic Republic of the Congo</td>
<td>1,300</td>
</tr>
<tr>
<td>Dominican Republic</td>
<td>5,500</td>
</tr>
<tr>
<td>Ethiopia</td>
<td>207,900</td>
</tr>
<tr>
<td>Guyana</td>
<td>3,000</td>
</tr>
<tr>
<td>Haiti</td>
<td>27,900</td>
</tr>
<tr>
<td>India</td>
<td>1,900</td>
</tr>
<tr>
<td>Kenya</td>
<td>410,300</td>
</tr>
<tr>
<td>Lesotho</td>
<td>45,700</td>
</tr>
<tr>
<td>Mozambique</td>
<td>138,800</td>
</tr>
<tr>
<td>Namibia</td>
<td>80,300</td>
</tr>
<tr>
<td>Nigeria</td>
<td>334,700</td>
</tr>
<tr>
<td>Russia</td>
<td>14,700</td>
</tr>
<tr>
<td>Rwanda</td>
<td>63,800</td>
</tr>
<tr>
<td>South Africa</td>
<td>917,700</td>
</tr>
<tr>
<td>Swaziland</td>
<td>38,700</td>
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<tr>
<td>Tanzania</td>
<td>255,500</td>
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<tr>
<td>Uganda</td>
<td>207,900</td>
</tr>
<tr>
<td>Vietnam</td>
<td>31,000</td>
</tr>
<tr>
<td>Zambia</td>
<td>286,000</td>
</tr>
<tr>
<td>Zimbabwe</td>
<td>59,900</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>3,209,700</strong></td>
</tr>
</tbody>
</table>

Numbers may be adjusted as attribution criteria and reporting systems are refined.

All numbers greater than 100 have been rounded off to the nearest 100.
The MTCT-Plus Initiative
Columbia University

MTCT-Plus will establish HIV primary care services for:

- Women identified as HIV-infected through perinatal prevention programs
- Their infants and children
- Family/household members
PLWA Outreach Workers
MTCT-Plus Initiative - Kenya, 2003
International Center for AIDS Care and Treatment Programs (ICAP) – Integration of Services

- Provision of comprehensive package of HIV care and treatment services
- Support that is integrated into national control program
- Focus on public sector facilities
- Family-centered care
- Multidisciplinary team support
- Psychosocial and community support
- Integration or linkages of services (e.g., PMTCT, TB)
- Recognition of prevention as well as treatment
- Retention in long term care
ICAP Approach – Additional Benefits and Synergies

- Build partnerships with ministries of health, academic institutions, non-governmental organizations
- Integrate work with national plans
- Focus on technical assistance and capacity building
- Translate scientific evidence into programs with rapid scale-up
- Generate new knowledge
- Ensure health system strengthening and sustainability
Countries with ICAP-Supported Programs
Cumulative Enrollment in HIV Care, by country  
(n = 1,113,543)
Cumulative Enrollment on ART, by country
(n = 561,722)

Number of patients

Mozambique
South Africa
Ethiopia
Rwanda
Tanzania
Kenya
Nigeria
Côte d'Ivoire
Swaziland

International Center for AIDS Care and Treatment Programs
Columbia University Mailman School of Public Health
Antiretroviral therapy coverage and all-cause mortality in South Africa, 2003–2006

WHO/UNAIDS, 2009
Total Annual Resources Available for AIDS 1986-2007

US$ million

10,000
9,000
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0

Less than US$ 1 million

59 212 257 292


Signing of Declaration of Commitment on HIV/AIDS, UNGASS

World Bank MAP launch

Gates Foundation

PEPFAR

Global Fund

Notes: [1] 1986–2000 figures are for international funds only
[2] Domestic funds are included from 2001 onwards
[ii] 1986-1993 data: Mann & Tarantola, 1996
Initiatives for Global HIV/AIDS
by Major Organizations

- Global AIDS Program - CDC/USAID/PEPFAR
- Coordination and integration of TB and HIV care - WHO, IUATLD
- Provision of antiretroviral medications - Gates, Pharma, PEPFAR
- Expansion of clinical trials for treatment and vaccines in resource-limited settings - NIH, EU
- Development of standardized antiretroviral treatment regimens and monitoring - WHO/UNAIDS, MSF
- Coordination of vaccine research and development - International AIDS Vaccine Initiative
- Global Fund for AIDS, TB, Malaria - UNAIDS
Beyond 2010

- Doing more, more strategically
- Leveraging the global health response for broader health and development gains
- Towards integrated and strengthened health care systems
- Addressing structural barriers through a rights-based approach

WHO Progress Report, 2010
Test and Treat?  
Treatment as Prevention?

Universal voluntary HIV testing with immediate antiretroviral therapy as a strategy for elimination of HIV transmission: a mathematical model
Reuben M Granich, Charles F Gilks, Christopher Dye, Kevin M De Cock, Brian G Williams
*Lancet 2009; 373: 48-57*
Department of HIV/AIDS, Stop TB Department, WHO, Geneva Switzerland

Universal Voluntary Testing and Treatment for Prevention of HIV Transmission
Carl W. Dieffenbach, PhD, Anthony S. Fauci, MD
*JAMA 2009; 301: 2380-2*
National Institute of Allergy and Infectious Diseases, National Institutes of Health, Bethesda, Maryland
Conclusions - HIV Epidemiology and Health Policy

- HIV/AIDS pandemic continues to affect millions globally, with enormous medical, social and economic consequences.

- Dramatic decreases in morbidity and mortality in industrialized countries, impressive scale-up in many resource-limited settings.

- Health policy related to HIV/AIDS has evolved over 30 years, determined by local, national, and international issues.

- Health policy is optimally driven by science, influenced by politics and activism, and implemented with adequate funding.

- Future control of HIV will depend on combined treatment and prevention strategies, health care system strengthening and if possible, a safe and effective HIV vaccine.
Acknowledgements

• Wafaa El-Sadr, MD, MPH; ICAP, Columbia University Mailman School of Public Health
• Tom Campbell, MD; Division of Infectious Diseases, University of Colorado Denver
• Rachel Baggaley, MBBS; HIV Department, World Health Organization
Thank You!
Number of People Receiving ART in Low- and Middle-Income Countries, by region, 2002–2009

WHO/UNAIDS, 2010
WELCOME TO UGANDA
THE PEARL OF AFRICA