Cancer Care and Prevention in Africa: Lessons from HIV/AIDS

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The sudden appearance of an epidemic typically inspires great attention, panic and action. Once the crisis subsides, public attention wanes, although the threat of contagions remains, especially among the world's poor.

Consider our response to severe acute respiratory syndrome, or SARS, with the more familiar germs that plague us daily. Compare it to the dangers of smoking or getting in a car and heading out on the road. Every life is precious, but when you see the numbers, SARS isn't as formidable a threat as we've made it out to be. Its death rate is far lower than that for AIDS or malaria; communicable, like the one believed to cause SARS, need to be most active in the winter and early spring. In addition to being the ships necessary to keep SARS at bay, we need to consider new cases and isolating people who are contacts to one another — we would do well to channel our energies into something more lasting - a permanent, integrated, and accountable global public health system for the surveillance and prevention of the diseases that are certain to emerge in the future. Right now, worldwide accounting of disease is incomplete at best, haphazard in large measure by shaky reporting from developing countries. These gaps show our containment of SARS and allow rapid spread more rapidly than reliable information. When the facts are few, it's easy for fear to fill the vacuum.

Howard Markel, professor of pediatrics and communicable diseases at the University of Michigan, is author of the forthcoming "When Germs Fail:"

Ebola outbreak 'out of control'
Global disease burden by region

Total disease burden from all causes, disaggregated by region. Total disease burden measured as the number of DALYs (Disability-Adjusted Life Years) per year. DALYs are used to measure total burden of disease - both from years of life lost and years lived with a disability. One DALY equals one lost year of healthy life.
Equality vs. Equity

**EQUALITY** = SAMENESS
GIVING EVERYONE THE SAME THING → It only works if everyone starts from the same place

**EQUITY** = FAIRNESS
ACCESS to SAME OPPORTUNITIES → We must first ensure equity before we can enjoy equality
Multidisciplinary **Partnerships** in AIDS Care and Prevention:

1) Enhancing Care Initiative (ECI)  
   1996-2001

2) Secure the Future (Bristol-Myers Squibb)  
   1999-present

3) African Comprehensive HIV/AIDS Partnerships (ACHAP)  
   2000- present

4) President’s Emergency Plan for AIDS Relief (PEPFAR)  
   2003- present
   - *Project HEART, Track 1.0*  
     2004-2012
   - *Harvard PEPFAR Partnerships, Track 1.0*  
     2004-2013
Estimated HIV Infection in Africa in 2007
based on statistics from the Joint UN Programme on HIV/AIDS

% of Adults with HIV/AIDS

- 15.0% to 28%
- 5.0% to <14.9
- 1.0% to <4.9%
- 0.5% to <0.9%
- 0.1% to <0.5%
- < 0.1%
- No available data
Secure the Future
Secure the Future

• In 1999, Bristol-Myers Squibb Foundation distinguished itself amongst its peers as the first to make a $100 million dollar commitment to advancing HIV/AIDS research and community outreach programs
  > By 2014, the program’s 15th anniversary, Secure the Future had committed $180 million to over 250 projects

• Efforts initially focused in seven African countries: Botswana, Burkina Faso, Lesotho, Namibia, South Africa, Swaziland, and Tanzania
  > Efforts have expanded to 22 countries
Secure the Future

U.S. National Library of Medicine

ClinicalTrials.gov

The Adult Antiretroviral Treatment and Resistance Study (Tshepo)

Sponsor:
Harvard School of Public Health

Collaborators:
Princess Marina Hospital, Botswana
Botswana Ministry of Health
McGill University Health Center
Bristol-Myers Squibb
Secure the Future
Secure the Future
Secure the Future

The Tshepo Study

- First large-scale antiretroviral treatment study in southern Africa, founded by Bristol-Myers Squibb Foundation’s Secure the Future initiative

- Foundational clinical trial that evaluated different antiretroviral treatment options, their efficacy, and drug resistance among Botswana AIDS patients
Secure the Future

CURRENT COUNTRIES
DRC, Ethiopia, Kenya, Lesotho, Swaziland, South Africa, Tanzania, and Zimbabwe

- 6 community-based treatment support centers and programs
- Pediatric AIDS Corps
- Technical Assistance Programmes
- 50 grants to maintain low prevalence of HIV/AIDS in 4 countries in West Africa
- Bristol-Myers Squibb Foundation NGO Training Institute
- 6 Children’s Clinical Centre’s of Excellence and a network of satellite children’s clinics
- Engage-TB
- HIV and Cancers
What Works and Why

• Partnerships – The actual work getting done

• Monitoring - What is happening?

• Evaluation - Why?
United States Leadership against HIV/AIDS, Tuberculosis, and Malaria Act of 2003
> FY 2004 - FY 2008

- $15 billion ($3 billion/year)
  > $1 billion for Global Fund in FY 2004 (and such sums as necessary for FY 2006-2008)

- Monitoring and evaluation resources **not** encouraged
  > The word “research” actively **not** allowed to be used

Tom Lantos and Henry J. Hyde United States Leadership against HIV/AIDS, Tuberculosis, and Malaria Act of 2008
> FY 2009 - FY 2013

- $48 billion (in total)
  > $2 billion for Global Fund in FY 2008 (and such sums as necessary for FY 2010-2013)
  > $4 billion for tuberculosis (in total)
  > $5 billion for malaria (in total)

- IOM studies require data evaluation plan, performance assessment, and impact evaluations
EGPAF: Project HEART Countries and Number of Sites, 2004-2011

- CÔTE D’IVOIRE: 476 Care and Treatment and PMTCT Sites
- ZAMBIA: 412 Care and Treatment and PMTCT Sites
- SOUTH AFRICA: 203 Care and Treatment and PMTCT Sites
- TANZANIA: 165 Care and Treatment Sites
- MOZAMBIQUE: 307 Care and Treatment and PMTCT Sites
EGPAF: Project HEART Care and Treatment
Results 2004-2011

Cumulative number of patients ever started on ART
Cumulative number of patients ever enrolled in HIV care
Number of reporting sites
“Ending AIDS by 2030”

• Success in the global campaign to treat HIV/AIDS in the last decade has led to the development of a Fast-Track strategy to “end” the AIDS epidemic by 2030

• One of the challenges to achieve this goal is mobilization of the essential resources

• A Winning “Trifecta” of Global Health Studies
  > 2006 – The SMART Study: “The virus is worse than the drugs”
  > 2011 – The HPTN 052 Study: “Treatment as Prevention” really works better than we thought
  > 2015 – The START Study: “Get on the drugs as soon as you know you are infected with HIV”
21 million more people are now “eligible”
HIV TREATMENT TARGET

- 90% diagnosed
- 90% on treatment
- 90% virally suppressed

* The 90–90–90 target provides that by 2020: (a) 90% of all people living with HIV will know their HIV status; (b) 90% of all people with diagnosed HIV infection will receive sustained antiretroviral therapy; and (c) 90% of people receiving antiretroviral therapy will achieve viral suppression.
How do Botswana’s Results Compare to UNAIDS Targets?

<table>
<thead>
<tr>
<th>HIV positive who know their status</th>
<th>Currently on ART (among HIV+ who know status)</th>
<th>Virologically suppressed (among persons on ART)</th>
<th>Virologically suppressed (among all HIV-positive)</th>
</tr>
</thead>
<tbody>
<tr>
<td>83%</td>
<td>90%</td>
<td>96%</td>
<td>73%</td>
</tr>
</tbody>
</table>

UNAIDS Targets:

\[ 90\% \times 90\% \times 90\% = 73\% \]

Current status in Botswana Communities:

\[ 83\% \times 87\% \times 96\% = 70\% \]
Top 10 causes of deaths in lower-middle-income countries in 2016

Crude death rate (per 100,000 population)

1. Ischaemic heart disease
2. Stroke
3. Lower respiratory infections
4. Chronic obstructive pulmonary disease
5. Tuberculosis
6. Diarrhoeal diseases
7. Diabetes mellitus
8. Preterm birth complications
9. Cirrhosis of the liver
10. Road injury

Fig. 1.5a Probability of dying from the four main noncommunicable diseases between the ages of 30 and 70 years, comparable estimates, 2012

Probability of dying from four main NCDs* (%)
- <15
- 15-19
- Data not available
- 20-24
- Not applicable

* Cardiovascular diseases, cancer, chronic respiratory diseases and diabetes
What Works and Why

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- Evaluation - Why?
MILLIONS SAVED
NEW CASES OF PROVEN SUCCESS IN GLOBAL HEALTH

AMANDA GLASSMAN and MIRIAM TEMIN
with the Millions Saved Team and Advisory Group
Key Lessons from “Millions Saved”

The Center for Global Development pulled the following key lessons from the 22 cases with 18 million years of lives saved “at a remarkably low cost”:

• In nearly all cases, country government led the way
• Incentives matter for health results
• What works: efficacy is not the same as effectiveness
• Some health programs assess health impact, but many do not, and many needed types of data are unavailable – such as cost-effectiveness data
• Evidence requires its own advocacy; good evaluation is not enough
• Evidence must be translated into advocacy that results in policy change
Global Cancer: Data and Projections

- In 2018, 18.1 million new cases and 9.6 million deaths were estimated.
  - Top 3 cancers: lung, breast, prostate.
  - 30% of cancer deaths are preventable.

- More than 2/3 of all cancer deaths occur in low- and middle-income countries.

- By 2040, the global burden of cancer is expected to grow to 27.5 million new cancer cases and 16.3 million cancer deaths.

- Worldwide, one in 5 men and one in 6 women develop cancer during their lifetime.
## Case Fatality Rates

<table>
<thead>
<tr>
<th>Region</th>
<th>Case Fatality Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Africa</strong></td>
<td></td>
</tr>
<tr>
<td>Eastern Africa</td>
<td>66%</td>
</tr>
<tr>
<td>Middle Africa</td>
<td>70%</td>
</tr>
<tr>
<td>Northern Africa</td>
<td>72%</td>
</tr>
<tr>
<td>Southern Africa</td>
<td>63%</td>
</tr>
<tr>
<td>Western Africa</td>
<td>67%</td>
</tr>
<tr>
<td><strong>Northern America</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>37%</td>
</tr>
<tr>
<td><strong>Europe</strong></td>
<td></td>
</tr>
<tr>
<td>Northern Europe</td>
<td>46%</td>
</tr>
<tr>
<td>Southern Europe</td>
<td>44%</td>
</tr>
<tr>
<td>Western Europe</td>
<td>48%</td>
</tr>
<tr>
<td></td>
<td>45%</td>
</tr>
<tr>
<td><strong>Australia/New Zealand</strong></td>
<td></td>
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</tbody>
</table>
Figure 5. Number of Radiotherapy Machines per 1 Million People, 2017

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Botswana
Cancer Care and Prevention in Botswana

• 70% of deaths from cancer occur in low- and middle-income countries
• People with cancer go undiagnosed or untreated
• Health systems lack personnel, training, and resources to provide chronic health care
• Comprehensive care and treatment is lacking

The fight against cancer urgently needs equitable and global approaches.
Cancer Care and Prevention in Botswana

Botswana-Rutgers Partnership

Joint effort of the Government of Botswana, the University of Botswana, and Rutgers University

• specialty medical training
• health care workforce capacity building
• biomedical engineering education
Leadership and Commitment

- Presidential leadership on combatting HIV/AIDS
- Commitment to prevention HIV infection and caring for those affected across Ministries and sectors of Batswana society
Partnership

• National culture to partner to overcome epidemic, while maintaining control and guiding priorities
Innovation

• New HIV/AIDS therapies demonstrated dramatic results
• Innovative partnerships and financing – with Botswana also a fiscal partner
• New diagnostics and disease monitoring helped expand HIV/AIDS treatment
• Innovative, national training programs applying new technologies, expanded task sharing, and responsive, standardized evaluation were utilized
• Social marketing and media campaigns, in addition to investment in known, traditional communication forms were used
Program Components

- **Evidence-based HIV/AIDS components**: covering known prevention, care, and treatment interventions
- Importance of the existing clinic- and district-based leadership and management realized
- Patient-centered approach is implemented, allowing differentiated care and prevention efforts
- National scaling up of training, laboratory capacity, clinical capacity, pharmacy and supply chain management
- Simple or basic guidelines, messages, or other components so national scalability and consistency possible
- **Monitoring**: EMR for HIV/AIDS patients actually implemented, which also could monitor program outcomes and supply needs
- **Evaluation**: Eventually evaluations of both patient and program outcomes and impact were achieved, with findings used to advance program improvements
Communication

• Engagement of and communication with multiple sectors of society were critical
• New tools for communication developed, especially for health care training and specialized training
• HIV/AIDS program able to effectively communicate its successes and failures
• Media and private sector marketing were utilized to better tell the stories needed to communicate what the program meant and how the people could benefit
• Stigma reduction was a key goal in the communications activities
Cancer Care and Prevention in Botswana

Three initial initiatives:

1. Global oncology fellowship program
2. Tobacco cessation program
3. Project ECHO - a distance, case-based mentoring program for specialty care and training
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