Francois Venter

Feb 2017

HIV: an update

Thanks Andy Hill, CHAI, Michelle Moorhouse, Marta Boffito, Mohammed Majam, Celicia Serenata, and a horde of others
Fact: HIV is easy to understand
What happens if you get HIV?

CD4 = length of track
Viral load = train speed
What happens if you get HIV?

CD4 drops

8 to 10 years
Wellness – nutrition, exercise, stop smoking, safe sex, mental health, ↓ alcohol

8 to 10 years

CD4 drops

Gets HIV!
Needs antiretroviral's

8 to 10 years

CD4

Gets AIDS

Gets HIV!
“When to start...”

• Balance drug toxicity/cost vs risk of disease
• Drugs so safe, start immediately
A widening menu of ARV use for treatment and prevention

Despite immediate increase from currently 17 million to 26 million people eligible for ART, the preventive effect will lead to decrease of number eligible after 2020.
Test and treat, treat all, no CD4!

“Treat All”: From Policy to Action - What will it take?

Thursday, 9 June, 13.00 – 14.30
Conference Room 11, United Nations
Fact: The drugs are amazing!

• Single tablet...
Impact of HIV response on life expectancy

Dramatic impact of HIV response on life expectancy, 1950-2015

Before and after initiation of ARV therapy!
Before and after initiation of ARV therapy!

Thapelo
• Uganda/ US/ UK – ‘higher life expectancy that matched populations

1. Expect a normal life expectancy:
   May et al. AIDS 2014
   • UK CHIC: 21 388 people started ART 2000-2010

If 35 year old man started ART:

<table>
<thead>
<tr>
<th>CD4</th>
<th>Baseline</th>
<th>1 year ART</th>
<th>5 years ART</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;200</td>
<td></td>
<td>71</td>
<td>&amp; VL&gt;50</td>
</tr>
<tr>
<td>200-349</td>
<td></td>
<td>78</td>
<td>78</td>
</tr>
<tr>
<td>&gt;350</td>
<td></td>
<td>77</td>
<td>81</td>
</tr>
<tr>
<td>General</td>
<td></td>
<td>78</td>
<td></td>
</tr>
</tbody>
</table>

Conclusion: If diagnosed, in care and on effective ART: life expectancy is normal

Great information to give to people newly diagnosed and encourage good adherence

Thanks: Julie Fox, Guys
First-line ARVs...

TDF + XTC + EFV

<table>
<thead>
<tr>
<th>Desirable Property</th>
<th>EFV/TDF/FTC</th>
</tr>
</thead>
<tbody>
<tr>
<td>High resistance barrier</td>
<td>No</td>
</tr>
<tr>
<td>Well tolerated</td>
<td>Not initially</td>
</tr>
<tr>
<td>No lab tox monitoring</td>
<td>TDF creat</td>
</tr>
<tr>
<td>Safe in pregnancy</td>
<td>Yes</td>
</tr>
<tr>
<td>Low pill burden</td>
<td>Yes FDC</td>
</tr>
<tr>
<td>Once a day</td>
<td>Yes</td>
</tr>
<tr>
<td>Use with TB (rif)</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Toxicity driver
Pill size
Low genetic barrier
Cost
Efavirenz’s warts...

- Neuro-psychiatric
  - JAIDS 2012;60:33
  - Lancet Infect Dis 2012;12:111
  - Clin Infect Dis 2006;42:273
  - Lancet 2009; 374: 796
  - AIDS 2014;28(10):145
  - JAIDS 2011;57:2841
  - Karamchand Medicine 2016

- Metabolic
  - Dave PLoS ONE 10(12): e0144286.

- Suicide

- Bone mineral density
  - Sonderup AIDS 2016

- Late encephalopathy
  - Variava JAIDS 2017

- DILI
  - Sonderup AIDS 2016
• 3TC=lamivudine; ZDV=zidovudine

The Evolving HIV Treatment Paradigm

HIV-1 discovered

1983
WITS RHI

1987
1995
1996
2006
2012–2013
2017
2020

ZDV monotherapy
ZDV/3TC
Triple-Drug Therapy
Single-Tablet Regimens
The Integrase Era
Long Acting Injectable?

1995
1996
2006
2012–2013
2017
2020

1983
1987
1995
1996
2006
2012–2013
2017
2020

3TC=lamivudine; ZDV=zidovudine

AbbVie Group Consultancy, Johannesburg, South Africa | September 17, 2016 | Company Confidential © 2016
Changing Life-Expectancy

Infectious diseases eradicated

Chronic diseases
The Perfect Life: Vitality & Brief Infirmity
Fact: It’s still pretty bad!
HIV and Southern Africa
Global targets for HIV programmes

90-90-90 global targets

HIV Positive People: 36.9 million
Diagnosed: 33.2 million
On ART: 29.5 million
Viral Suppression: 26.9 million

The reality

HIV Positive People: 36.9 million
Diagnosed: 19.8 million
On ART: 15.0 million
Viral Suppression <1000: 11.6 million

The human face
TB...

Thanks: Braamie Variava
Most ID docs would much rather have HIV than TB

• Easy to treat
• Safe drugs
• Long term consequences of TB are horrible
Fact: HIV prevention remains a huge challenge
Fact: We don’t understand HIV transmission very well
What works?

• Treatment
• PMTCT
• Circumcision
• Needle exchange
• PEP
• (HIV testing)
• (Condoms)
• (Programmes focusing on risk groups)
• (Treatment as prevention)
Fact: Sex is now safe
ARV’s

• As treatment: undetectable=untransissable
• PrEP/PEP: almost total protection
High Coverage of ART Associated with Decline in Risk of HIV Acquisition in Rural KwaZulu-Natal, South Africa

Frank Tanser,¹,² Till Bärnighausen,¹,² Erofili Grapsa,³ Jaffer Zaidi,¹ Marie-Louise Newell¹,²

The landmark HIV Prevention Trials Network (HPTN) 052 trial in HIV-discordant couples demonstrated unequivocally that treatment with antiretroviral therapy (ART) substantially lowers the probability of HIV transmission to the HIV-uninfected partner. However, it has been vigorously debated whether substantial population-level reductions in the rate of new HIV infections could be achieved in “real-world” sub-Saharan African settings where stable, cohabiting couples are often not the norm and where considerable operational challenges exist to the successful and sustainable delivery of treatment and care to large numbers of patients. We used data from one of Africa’s largest population-based prospective cohort studies (in rural KwaZulu-Natal, South Africa) to follow up a total of 16,667 individuals who were HIV-uninfected at baseline, observing individual HIV seroconversions over the period 2004 to 2012.

Holding other key HIV risk factors constant, individual HIV acquisition risk declined significantly with increasing ART coverage in the surrounding local community. For example, an HIV-uninfected individual living in a community with high ART coverage (30 to 40% of all HIV-infected individuals on ART) was 38% less likely to acquire HIV than someone living in a community where ART coverage was low (<10% of all HIV-infected individuals on ART).

One of the most successful public health interventions ever undertaken has been the provision of combination antiretroviral therapy (ART) to more than 6.2 million people in sub-Saharan Africa (I). The ART scale-up is not based on ecological associations (correlations...
• Sex is inherently risky – ‘safe sex’ is nonsense

How on earth do we package the message?
Buzzword: Behaviour change

• “We can’t afford NOT to do behaviour change”
• We have successful condom and knowledge programs
Fact: Transmission is not well understood

• And the ‘solutions’ are often based on common sense mixed with morality and poor science
“Homeopathy outperformed medicine till the 70s...”
“Stop screwing around!”

• “men have multiple partners”
• ‘concurrency drives the epidemic’
• US: Up to 80% of one or both partners cheat in a relationship
• KZN: 1/3 men cheated over 5 years
• Shisana/HSRC: Married women higher risk than married men
“Where health advice is not based on actual evidence, it is likely to give expression to individual and social intuitions, and these frequently seem to express Calvanist moralistic ideas about how we must be improved by self-denial and suffering.” – Professor Lucy Allais, Centre for Ethics, Wits
‘Mobile men with money’: these are only words so why does it matter?

Professor Peter Aggleton

Organically, viral patterns. This phenomenon was referred to as the “viral (O&D) syndrome” because older men and women exchanged sex with younger persons by giving them rides in their expensive cars, buying them cell phones, clothes or actually giving them cash. This is also referred to as the “four Cs” syndrome of young girls and boys lured with cell phones, clothes, cash and cars for exchange of sexual relations.
‘Mobile men with money’: these are only words so why does it matter?

Professor Peter Maggleton

Significantly older partners. This phenomenon was referred to as the “sugar daddy and sugar mommy syndrome” because older men and women exchanged sex with younger persons by giving them rides in their expensive cars, buying them cell phones, clothes or actually giving them cash. This is also referred to as the “four C” syndrome of young girls and boys lured with cell phones, clothes, cash and cars for exchange of sexual relations.
‘Mobile men with money’: these are only words so why does it matter?

Professor Peter Maggs

Significantly older partners. This phenomenon has been termed “Age Gap and Financial Inequality syndrome” because older men and women exchanged sex with younger persons by giving them rides in their expensive cars, buying them cell phones, clothes or actually giving them cash. This is also referred to as the “four C” syndrome of young girls who are lured with cell phones, clothes, cash and cars for exchange of sexual relations.
Effect of concurrent sexual partnerships on rate of new HIV infections in a high-risk urban South African population: a cohort study

No data

Summary
Background Concurrent sexual partnerships are widely believed to be one of the major drivers of the HIV epidemic in sub-Saharan Africa. This view is supported by theoretical models which demonstrate that an increase in the proportion of concurrent partnerships could substantially increase the rate of spread of HIV. However, the evidence from observational studies on HIV incidence has not been appropriate to support this view in an epidemiological setting.

We describe this population-based cohort study, in a rural area of the South African Highveld, that monitored the incidence of new HIV infections among women and men aged 15–49 years who were tested at least three times between 1998 and 2002. The main results were that concurrent partnerships increased the risk of HIV infection, and that the risk was highest among those who were younger and had more sexual partners. The results provide strong evidence that concurrent partnerships are a major driver of HIV incidence.

Key findings
- Concurrent partnerships are a major driver of HIV incidence.
- The risk of HIV infection is highest among those who are younger and have more sexual partners.
- The results provide strong evidence that concurrent partnerships are a major driver of HIV incidence.

Conclusions
- Concurrent partnerships are a major driver of HIV incidence.
- The results provide strong evidence that concurrent partnerships are a major driver of HIV incidence.

NIHAPAN

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...
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“Mobile men with money”: these are only words so why does it matter?

Professor Peter Aggleton

Do Age-Disparate Relationships Drive HIV Incidence in Young Women? Evidence from a Population Cohort in Rural KwaZulu-Natal, South Africa

Guy Harley, S.D., Marie-Louise Naylor, M.D., T.J. Frank Tembe, M.B.B.S., Prokasha Kavachi, M.D., M.P.H., S.V. Subramaniam, M.D.,* and Till Birx, M.D., M.P.H.,† (Received for publication June 13, 2012; revised and accepted August 28, 2012)
Constant appeals to morality, family values and a better time….

- Modern relationships, pornography, concurrency, video games, promiscuity, drug use, degradation of respect, sugar daddies, single people, TV, materialism

- “Our youth now love luxury. They have bad manners, contempt for authority; they show disrespect for their elders and love chatter in place of exercise; they no longer rise when elders enter the room; they contradict their parents, chatter before company; gobble up their food and tyrannize their teachers.”

- ? Aristophanes ≈ 400 BC
• “...Young people in the US report riskier sexual behaviors than young people in SA, despite the much higher prevalence of HIV infection in SA. Factors above and beyond sexual behavior likely play a key role in the ongoing transmission of HIV in South African youth,”
What about sex work?

• Illegal in SA, high levels of police harassment
• Challenge the two extremes views of sex work
• We ‘closet’ sex workers
Effective sex worker programmes?

• Education – often by peers
• Condoms and sexual health services
• HIV testing and counselling
• Supportive legal environment
What about the clients?

- Tijuana – sex work demographic
- Clients ‘closeted’
What about the gays?

- Men-who-have sex with men; the ‘down low’
- Transgenders
- “Silent” in Africa
Drug use?

• Needle exchange works
• Few successes internationally – Netherlands, Canada...
Drug use in or region?

- Intravenous use uncommon
- Other drugs vary
- Conventional debate: Hysteria and legislation
But!

- It's not sex workers, MSM or drug users who drive the majority African epidemic.
Health: a unique opportunity

- Health has a *generally agreed ethical imperative*
- HIV is a very useful proxy for overall health care: easily measured, and represents almost every sector and area of health
Figure 11.
Expenditure on health as a proportion of public expenditure, 2011

Source: WHO Global Health Expenditure Database (www.who.int/nhds/database).

Delivering results toward ending AIDS, Tuberculosis and Malaria in Africa
African Union accountability report on Africa–G8 partnership commitments 2013
HIV has....

• Mobilised unprecedented resources for health more broadly
• Made ‘evidence’ far more central to medicine as a whole
• Made discussion about sex more open than ever before
• Focused attention on patents, health care spending vs other sending
• Put human rights front and centre (but also challenged the rhetoric)
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- 0833991066