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Research agenda on structural challenges to reduce vulnerability of women in South Africa – opportunities for action: a scientific perspective

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Overview

- Preventing sexual transmission of HIV
- Importance of young girls in HIV epidemic in SA
- Need for novel approaches
 - Role of behavioural economics in reducing HIV risk
- Combination prevention interventions in schools that include structural interventions – HPTN 068 & RHIVA

HIV prevention interventions shown to be effective in reducing HIV incidence in RCTs – July 2011

Study

Effect size (CI)

Antiretroviral treatment for prevention
(HPTN052 - Africa, Asia, Americas)

96% (73; 99)

PrEP for discordant couples
(PartnersPrEP - Uganda, Kenya)

73% (49; 85)

PrEP for heterosexuals
(TDF2 - Botswana)

63% (21; 48)

Medical male circumcision
(Orange Farm, Rakai, Kisumu)

54% (38; 66)

PrEP for MSMs
(iPrEX - Americas, Thailand, South Africa)

44% (15; 63)

STD treatment
(Mwanza - Tanzania)

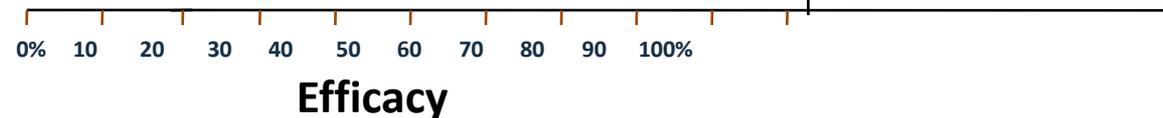
42% (21; 58)

Microbicide
(CAPRISA 004 – South Africa)

39% (6; 60)

HIV Vaccine
(RV144 – Thailand)

31% (1; 51)



Convergence around ARVS

Key points to ponder in intervening to reduce HIV Infection Rates

1. Who is at highest risk?
2. What are the key reasons for this risk?
3. Are these reasons for risk amenable to change?
4. If amenable to change, what is the catalyst for change? Eg Cash alone or more
5. Is change at a sufficient level to impact overall risk?
6. Is the catalyst/cash incentive of sufficient intensity to lead to change?
7. Is their sufficient change in overall risk to lead to a reduction of HIV infection?

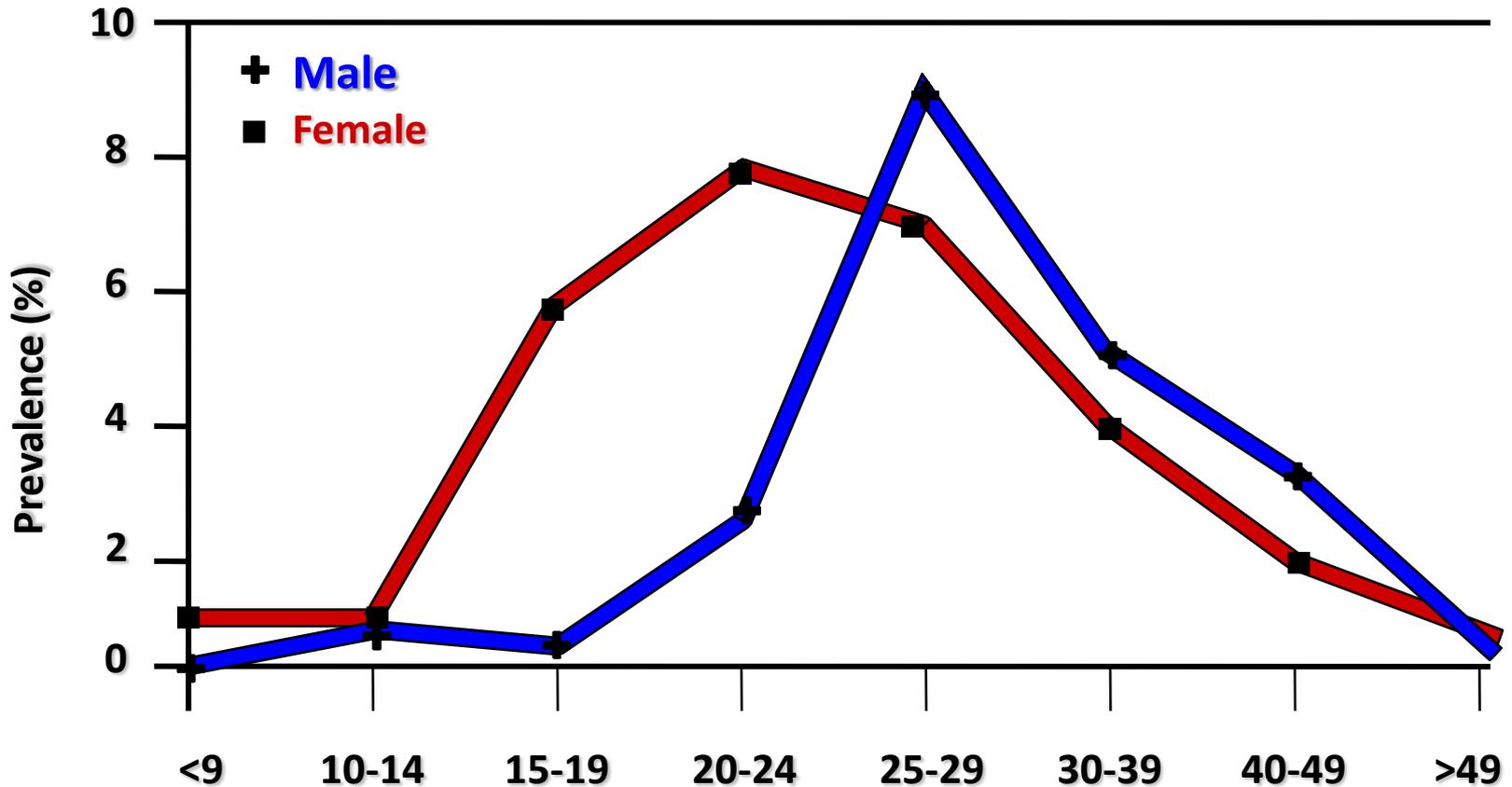
Key lessons in the conduct of HIV prevention trials (1)

- Effect size in individual prevention interventions are small
 - Fidelity of delivery of intervention critical
 - Saturation and coverage of target population key
 - Maximise adherence if dependent on repeat exposure
- Site Selection & Populations critically important
 - High incidence rates
 - Substantial difference can be made & measured

Key lessons in the conduct of HIV prevention trials (2)

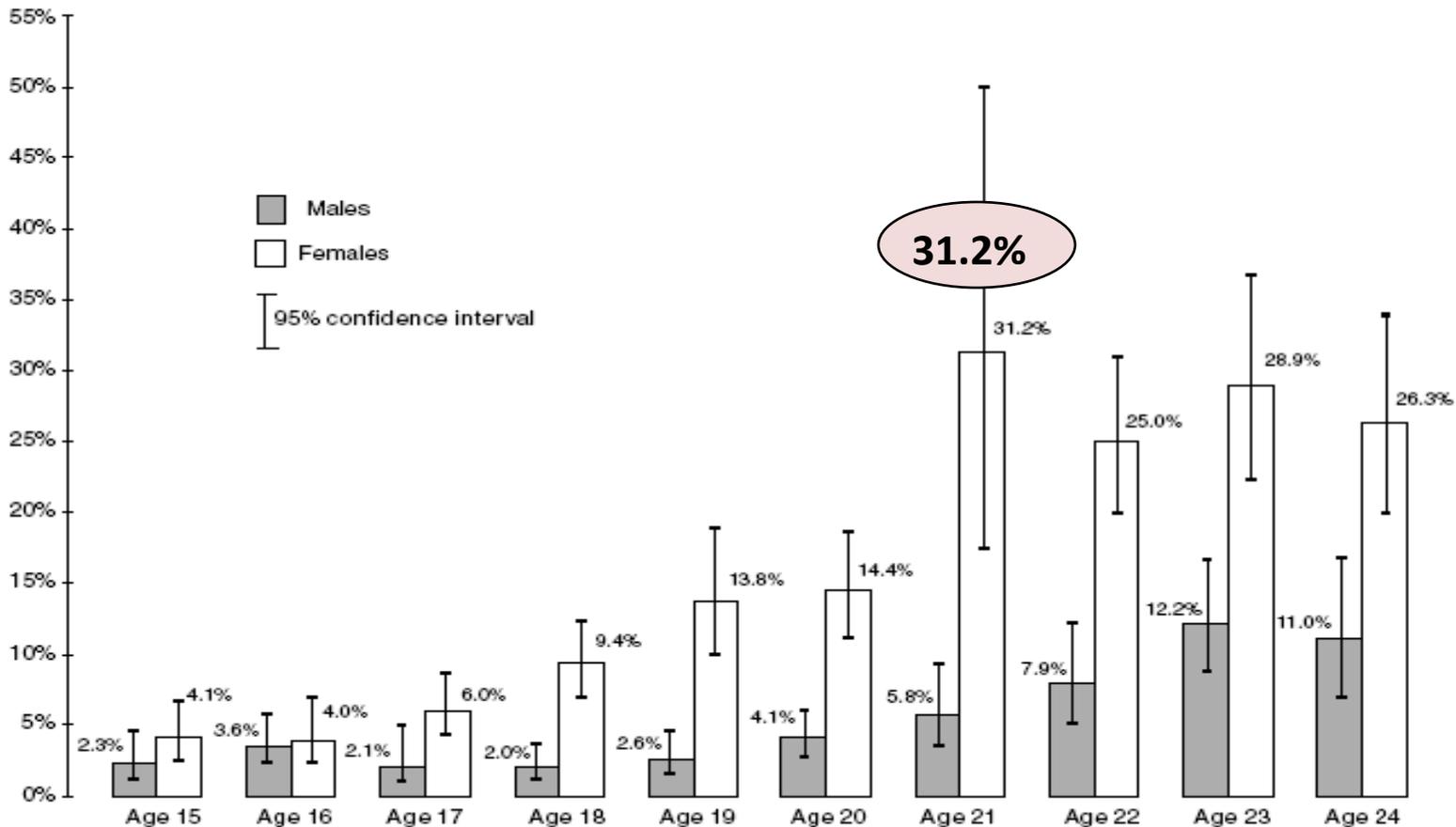
- Measure HIV incidence rates
 - Poor correlation between behavioural markers and HIV risk
- Evaluate with most rigorous study design - RCTs
- Minimise Design effects
 - Minimise too much variability within and between clusters/populations/unit of randomisation

Age & gender distribution of HIV infection in South Africa - 1992



Source: Abdool Karim Q, Abdool Karim SS, Singh B, Short R, Ngxongo S.
AIDS 1992; 6: 1535-9

Importance of young women in the HIV epidemic in South Africa





HIV prevalence in pregnant women in rural Vulindlela, South Africa (2005-2008)

Age Group (Years)	HIV Prevalence (N=1237)
≤16	10.6%
17-18	21.3%
19-20	33.0%
21-22	44.3%
23-24	51.1%

Which of the known HIV prevention strategies address vulnerability of young women?

- Existing proven HIV prevention strategies - ABCCC:
 - Abstinence
 - Behaviour
 - Condoms (male and female)
 - Counselling and Testing
 - Circumcision (Medical Male)

Failure to curb HIV in SSA is reflects a failure to reduce HIV in young women

HIV risk in young, women in South Africa

- **No sense of future**
 - Live for today
- **Pressure to have sex**
 - for frivolous favours
 - peer pressure
 - flattering to be desired by an older man
- **Poor internalisation of HIV statistics and low personalisation of HIV risk**
 - Knowledge of HIV status is low

Challenges to HIV prevention in young women

- Intervention programs in adolescents have consistently failed to show an impact on HIV!
Why?
 - HIV/AIDS is more than a behavioural problem, but it is embedded in socio-economic & political context
 - Failure to address gender power relations
 - Failure to consider survival and coping strategies
 - Imposed advice to change vs Facilitate self-imposed change
 - Failure to link prevention & treatment

School-based HIV/AIDS prevention programmes to date...

- Most focus on ↑ AIDS knowledge
- They are rarely evaluated
- When done, evaluations are poor:
 - Inadequate measurement of impact eg. condoms distributed, school children educated, intentional behaviour not meaningful
 - Reduction in HIV infection is goal, but seldom measured
 - No control groups; cannot assess direct impact
- Some show increased HIV knowledge & awareness, some demonstrate self-reported behaviour change, none show success in preventing HIV infection

Reducing HIV risk in young people – thinking out of the box....

- School completion rates & annual HIV testing associated with lower HIV infection rates
- Incentivised behaviour change associated with positive health outcomes in diverse settings:
 - community based
 - hard to reach populations
 - workplace

Need for novel approaches to HIV prevention – Role of Behavioural Economics

- Conditional Cash Transfers
- Microfinance
- Contingency Management

Use of cash incentives shown to be successful in drug rehabilitation

- Cash incentives in cocaine users (Lewis & Petry 2005)
 - 159 cocaine abusers randomized to cash incentives, classified for 3 or more family related activities during the 12 week treatment period
 - Those who joined family related activities remained abstinent longer
- Lower vs higher cash incentive for cocaine abuse (Sindelar *et al.* 2007)
 - 120 cocaine abusers randomized to \$80 vs \$240 vs control
 - Larger amount more effective - longest duration of abstinence & higher treatment completion
- Weekly \$5 gift certificates increase treatment completion rates in African American women (Bride and Humble 2008)
 - 7 fold higher treatment completion compared to controls (total value of incentives of \$175)

Cash Incentives to Quit Smoking

- GE employees to quit smoking in the USA
- 878 employees randomly assigned to:
 - receive information about smoking-cessation programs
 - receive information about programs **plus financial incentives**
- Incentivised group had significantly higher rates of smoking cessation than did the information-only group (all p's<0.001):
 - 9-12 months after enrollment (14.7% vs. 5.0%)
 - 15-18 months after enrollment (9.4% vs. 3.6%)
 - higher rates of enrollment in a smoking-cessation program (15.4% vs. 5.4%)
 - completion of a smoking-cessation program (10.8% vs. 2.5%)
 - smoking cessation within the first 6 months after enrollment (20.9% vs. 11.8%)

Combining Cash Incentives and Microfinance: *Progresa-Oportunidades*

- Mexican anti-poverty programme that combines a traditional cash transfer program with financial incentives for families to invest in human capital of children (health, education and nutrition)
 - **Conditionality:** families must obtain preventive health care, participate in growth monitoring and nutrition supplements programs, and attend education programs about health and hygiene.
 - significant increased utilization of public health clinics for preventive care.
 - lowered the number of inpatient hospitalizations and visits to private providers.
 - significant improvements in the health of both children and adults

(Gertler et al Health economics. 2008 Jul 15)

Incentivized Behaviour Change Interventions: Lessons Learnt

- Behavioural Contracting
 - Delineate behaviors that will be reinforced
 - Specify how desired behaviours will be monitored, frequency of monitoring, contingencies imposed
- Quantify objectively
- Ensure consistency in messaging and reinforcement
- Dose and frequency of monitoring delineated behaviours should occur frequently enough and be monitored sufficiently frequently to enable adequate reinforcement

Incentivized Behaviour Change Interventions: Lessons Learnt (2)

- Incremental goal setting and supportive reinforcement
 - Initial easy task to introduce reinforcement
 - Reward successive behaviours, approximating desired behaviour
- Reward Immediately
 - Learning occurs best if followed by consequence without delay
 - Encourage clients to bring proof of completion as soon as behaviour completed
 - Delays in reinforcement reduce subjective value of reward and may be less likely to influence behaviour

Lesson on CCT in Schools in Africa

- **Baird (2009) Malawi:**
 - Cash incentive payments of \$10 per month for 75% monthly school attendance
 - School fees paid to school upon proof of enrolment
 - Cash pay-outs done monthly
- **Results after 1 year:**
 - Increases in self-reported school enrolment
 - Declines in early marriage
 - Declines in teenage Pregnancy
 - Declines in Sexual activity and risky sexual behaviours
- **Recommendations**
 - Need for establishing if findings effect HIV Incidence

HPTN 068 & RHIVA:

4 key concepts for altering HIV epidemic in young women in SA

- **Target:** Young women, group most at HIV risk – critical time
- **Intervention Design:** Based on facilitating & incentivising young women to choose a better future through healthier choices & better educational opportunities
- **End-product:** Intrinsic (and self-imposed) behaviour change – greater prospect of sustainability
- **Rigorous evaluation:** Based on the highest standards of scientific evidence and ethics for global impact

HPTN 068: Swa Koteka (it is possible!)



HPTN 068: Effects of cash transfer to prevent HIV infection among young South African women (Agincourt, Mpumalanga)

- Randomized Controlled Trial
- Intervention: Cash transfer conditional (CCT) on school attendance to young woman and family monthly for 3 years
- Population: 2,660 young women in grades 8-11, ages 13-20 years (Agincourt, South Africa)
- Primary Objective: HIV incidence rates
- Results expected in 2015.

RHIVA (Reducing HIV Infection in Adolescents) Intervention

- A combination prevention intervention by MIET and KZN DoE to reduce HIV infection in high schools learners in rural KZN
- All schools receive an ‘essential package’ of improvements
- Incentive schools additionally receive cash incentives provided at fixed intervals to enrolled learners

RHIVA Intervention

- Annual HIV Testing
 - R200 per annum
- Academic performance
 - R300; R150 for passing June and November exams
- Participation in the Sustainable Livelihood Programme
 - Quarterly payment of R50 for at least 80% attendance
 - R200 for annual completion of portfolio (community audit, project identification, business plan, and project implementation)



Assessing the Impact of RHIVA (CAPRISA 007)

Study Schema

- **Purpose:** to assess the impact of a school-based incentivised HIV prevention intervention on HIV incidence rates in KZN
- **Design:** Phase III controlled, cluster randomised, trial
- **Study Population:** All grade 9 and 10 learners attending 14 secondary schools in Vulindlela
- **Study Size:** 2800 learners (~ 200 per school)
- **Study Duration:** 36 months
- **Primary outcome:** HIV incidence rates
- **Secondary outcomes:** Academic performance, sexual behaviour & knowledge of HIV status

Summary HPTN 068 & RHIVA

Approach

- HIV prevention is a complex challenge – no silver bullets or cookie cutter approaches
- Innovation to support self-generated/intrinsic behaviour change
- Rigorous study design
- Assess the outcome that really matters – HIV infection
- Sustainability through unique, multi-disciplinary partnerships
- Boldness – aiming to derail a vicious & devastating epidemic

What does HIV prevention look like today and implications for HIV prevention?



Microbicides for women

Abdool Karim Q, *Science* 2010

Male circumcision

Auvert B, *PLoS Med* 2005
Gray R, *Lancet* 2007
Bailey R, *Lancet* 2007

HIV Counselling and Testing

Coates T, *Lancet* 2000
Sweat M., *Lancet Infect Dis* 2011



Treatment for prevention

Donnell D, *Lancet* 2010
Cohen M, *NEJM* 2011
PMTCT



Treatment of STIs

Grosskurth H, *Lancet* 1995



COMBINATION HIV PREVENTION

Needle exchange & SU treatment

Des Jarlais D, *AIDS* 1987 Jarlais DC, Friedman SR. *AIDS* 1987

Prevention for Positives

Fisher J, *JAIDS*

Oral PrEP – MSM, discordant couples, men & women

Grant R, *NEJM* 2010, Teijan C, Baeten J



Male Condoms

Hanenberg RS, *Lancet* 1994



Cash Incentives

CAP 007, HPTN 068

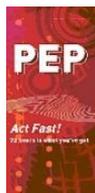
Behavioral Intervention - ABC

Stoneburner R, *Science* 2004



Post Exposure prophylaxis (PEP)

Scheckter M, *JAIDS* 2002



Vaccines

Rerks-Ngarm S, *NEJM* 2009



Adapted Abdool Karim SS, CAPRISA SAB, June 2011

HCT & Linkage to Prevention and Treatment Services – an opportunity for strengthening access to health services

- Opportunity during VCT to enhance sexual reproductive health – pregnancy & STI prevention
- Opportunity for community to access VCT, prevention & treatment services
- Opportunity to increase awareness of other prevention options eg MMC, microbide gel, PrEP
- Opportunities to understand transmission networks and risk to inform targeted prevention efforts
- Link to positive/secondary prevention
- Opportunity to alter epidemic trajectory

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Thanks for your attention!