

Cost per HIV-infection averted (HIA) through Couples' VCT in Zambia

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Background of CVCT

- 75% of Zambian adults aged 19-49 are in cohabiting unions
- Nationwide, 10% of unions are discordant (M+F- or M-F+) and 80% include two HIV-partners
- Couples' Voluntary HIV Counseling and Testing (CVCT) reduces new infections in both discordant and concordant HIV- couples

Enrollment and Retention of HIV Discordant Couples in Lusaka, Zambia

(*J Acquir Immune Defic Syndr* 2008;47:116-125)

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Promotion of couples' voluntary counselling and testing for HIV through influential networks in two African capital cities

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Steven Dunham¹, Faith Henderson^{1,2}, Moses Sinkala⁸, Michel Carael⁹ and
Alan Haworth^{1,3,10}

BMC Public Health 2007, 7:349

New heterosexually transmitted HIV infections in married or cohabiting couples in urban Zambia and Rwanda: an analysis of survey and clinical data

Lancet 2008; 371: 2183-91

Kristin L Dunkle, Rob Stephenson, Etienne Karita, Elwyn Chomba, Kayitesi Kayitenkore, Cheswa Vwalika, Lauren Greenberg, Susan Allen

Unintended Pregnancy among HIV Positive Couples Receiving Integrated HIV Counseling, Testing, and Family Planning Services in Zambia

PLoS ONE 8(9): e75353.

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Rapid Voluntary Testing and Counseling for HIV

Acceptability and Feasibility in Zambian Antenatal Care Clinics

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Annals of the New York Academy of Sciences

Volume 918, Issue 1, Article first published online: 25 JAN 2006

Promotion of couples' voluntary HIV counselling and testing in Lusaka, Zambia by influence network leaders and agents

BMJ Open 2012;2:e001171.

Kristin M Wall,^{1,2,4} William Kilembe,^{1,2,3} Azhar Nizam,^{1,2,5} Cheswa Vwalika,^{1,2,3}
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Contraceptive discontinuation and switching among couples receiving integrated HIV and family planning services in Lusaka, Zambia

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Naw Htee Khu^a, Ilene Brill^e, William Kilembe^a,
Rob Stephenson^f, Elwyn Chomba^{a,g}, Cheswa Vwalika^a,
Amanda Tichacek^a and Susan Allen^a

AIDS 2013, Vol 27 (Suppl 1)

The influence of motivational messages on future planning behaviors among HIV concordant positive and discordant couples in Lusaka, Zambia

AIDS Care, February 2008; 20(2): 150-160

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Local Residents Trained As 'Influence Agents' Most Effective In Persuading African Couples On HIV Counseling and Testing

Barrot Lambdin¹, William Kanweka¹, Mubiana Inambao¹, Lawrence Mwananyanda¹, Heena Shah¹, Sabriya Linton¹, Frank Wong¹, Nicole Luisi², Amanda Tichacek², James Kalowa¹,
Elwyn Chomba³, and Susan Allen²

Health Aff (Millwood). 2011 August ; 30(8): 1488-1497.

The impact of project closure on HIV incidence and mortality in a cohort of couples in Lusaka, Zambia

R. Stephenson^{a*}, E. Shutes^b, S. McKenna^{b,c}, S. Allen^{a,b}, I. Brill^d, N. Kancheya^e, I. Zulu^e, M. Sinkala^f,
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AIDS Care

Vol. 20, No. 6, July 2008, 683-691

Evolution of Couples' Voluntary Counseling and Testing for HIV in Lusaka, Zambia

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J Acquir Immune Defic Syndr • Volume 47, Number 1, January 1, 2008

HIV in couples: 60-94% of transmissions in Africa
CVCT: ↓ transmission in discordant and concordant HIV- couples by >2/3
ART treatment-as-prevention (TasP): 96% efficacy in an trial setting (HPTN-052)

WHO recommendations:
1-3: CVCT and mutual disclosure for all couples
4: Counseling for discordant couples on therapeutic ART
5: **Where affordable, TasP** for discordant couples (*Already Policy in Zambia*)

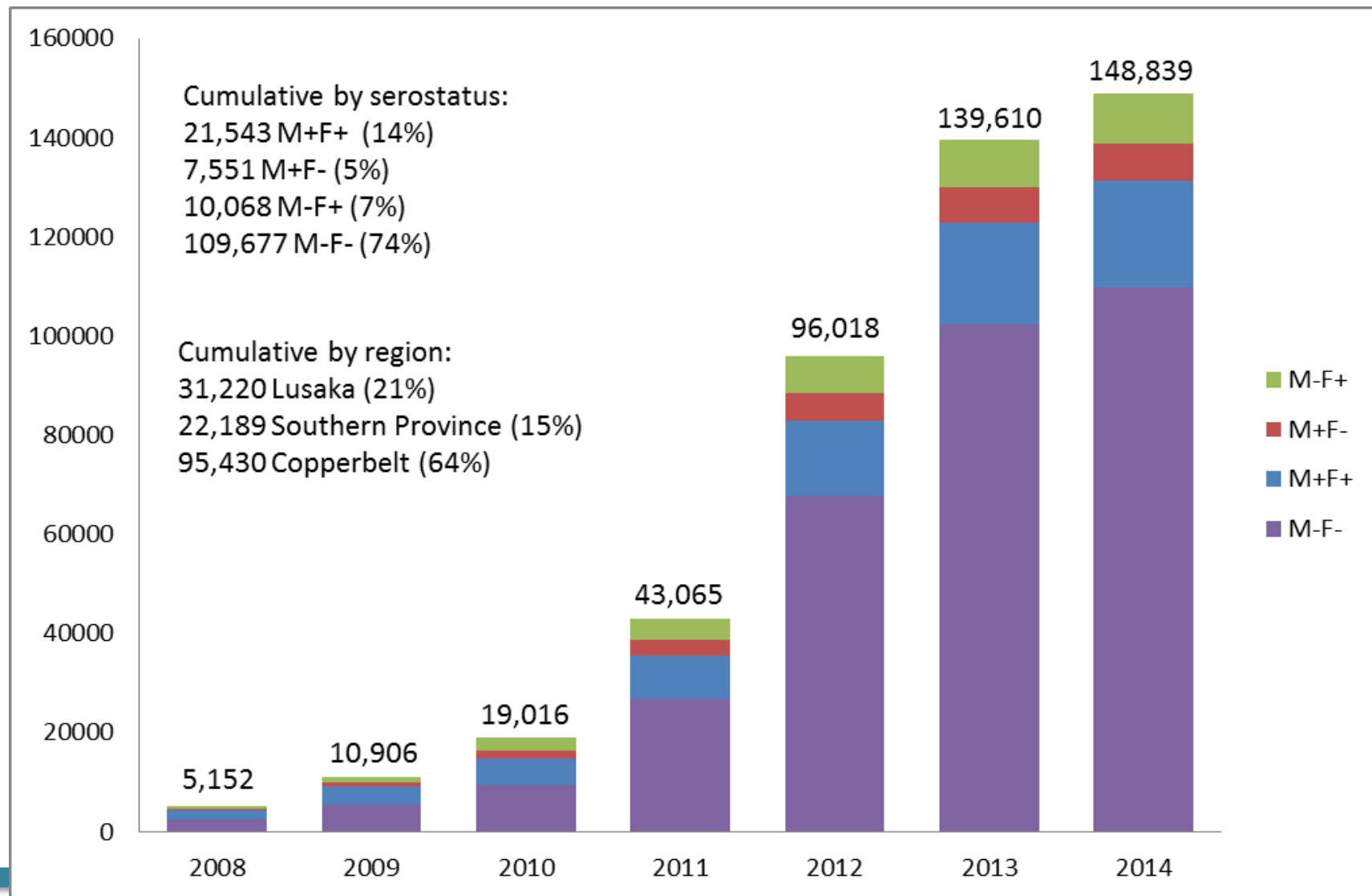


How many infections are prevented by CVCT, VMMC, or TasP in the real world?
How much does each infection cost to prevent?
What should priorities be in light of impact and cost?

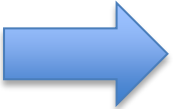
Overview and basic principles of cost effectiveness

- To calculate cost-effectiveness, you need
 - Costs
 - Some measure of effect size
- Costs
 - Many ways to estimate
 - Vary a great deal depending on country, type of program, and stage of implementation
- Effect size
 - Few studies have published effect sizes of prevention interventions
 - Fewer still are based on RCT

Cumulative number of couples tested for HIV in 70 government clinics in Mazabuka, Monze, Lusaka, Ndola, Kitwe, Chingola, and Luanshya, Zambia 2008-2014



HIV model parameters in Zambia

- 148,839 couples tested in Zambia since 2008
- 17,619 discordant (12%), and 109,677 M-F- (74%)
- Before CVCT, ART use was associated with significantly fewer HIV infections in discordant couples
- No ART 8.6/100 PY  ART 3.6/100 PY
 - Rate ratio 0.4 (95% C.I. 0.2-0.7)

Important stratification

- CVCT was associated with a significant reduction in new HIV infections in discordant couples overall and con negative couples

Couple type	Pre-CVCT	Post-CVCT	Rate ratio (95% CI)
M+ F-, M-F+ (Discordants)	10/100 PY	2.1/100 PY	0.2 (0.1-0.4)
M-F- (Con neg)	1.4/100 PY	0.1/100 PY	0.09 (0.01-0.30)

Important stratification

- CVCT was associated with a reduction in HIV incidence, *whether or not the HIV+ partner was on ART before couples' testing*

	Pre CVCT	Post CVCT	Rate ratio (95% CI)
CVCT, no ART	12.3/100 PY	3.7/100 PY	0.3 (0.1-0.7)
CVCT after ART	7.8/100 PY	1.5/100 PY	0.2 (0.1-0.5)



CVCT Benefits Summary

- CVCT is associated with a reduction in transmission from
 - 12.3%/year to 3.7%/year in discordant couples who are not on ART
 - 1.4%/year to 0.1%/year in concordant negative couples
- CVCT is effective even among discordant couples with the HIV+ partner on ART
 - 7.8%/year to 1.5%/year.

Program evolution for CVCT costs

- **Early:** \$50-\$75/couple: costs include advocacy, basic training, promotions to reach 10% of couples
- **Mid:** \$25-\$50/couple: advocacy and training costs reduce as most community and politico-administrative leaders are on board and the majority of providers are certified; active promotions continue to reach another 10% of couples
- **Mature:** \$10-\$25/couple: social norms have been established, CVCT services are integrated into existing ANC, VCT, ART, VMMC, under 5, Family planning etc services; both providers and clients view CVCT as routine, 80% of couples
- Modifying factors: mono vs. multilingual, distance, transport cost

Example costs per couple for CVCT

- Lusaka, Southern province: \$70/couple (early stage, multilingual, high cost of transport, distances)
- Copperbelt: \$46/couple (early-mid stage, monolingual, many clients can walk to clinic)
- Rwanda: \$10/couple (mature stage: MoH pays this amount to clinics as part of Performance-Based Financed govt health care)
 - Since 2008, >85% of ANC visitors nationwide have been tested with spouses. An estimated 80% of Rwanda's discordant couples have been jointly counseled and 40,000 discordant couples are enrolled in quarterly follow-up in government clinics

Actual Cost per HIV Infection Averted

148,839 Couples Tested

Cost per Couple Tested: \$55

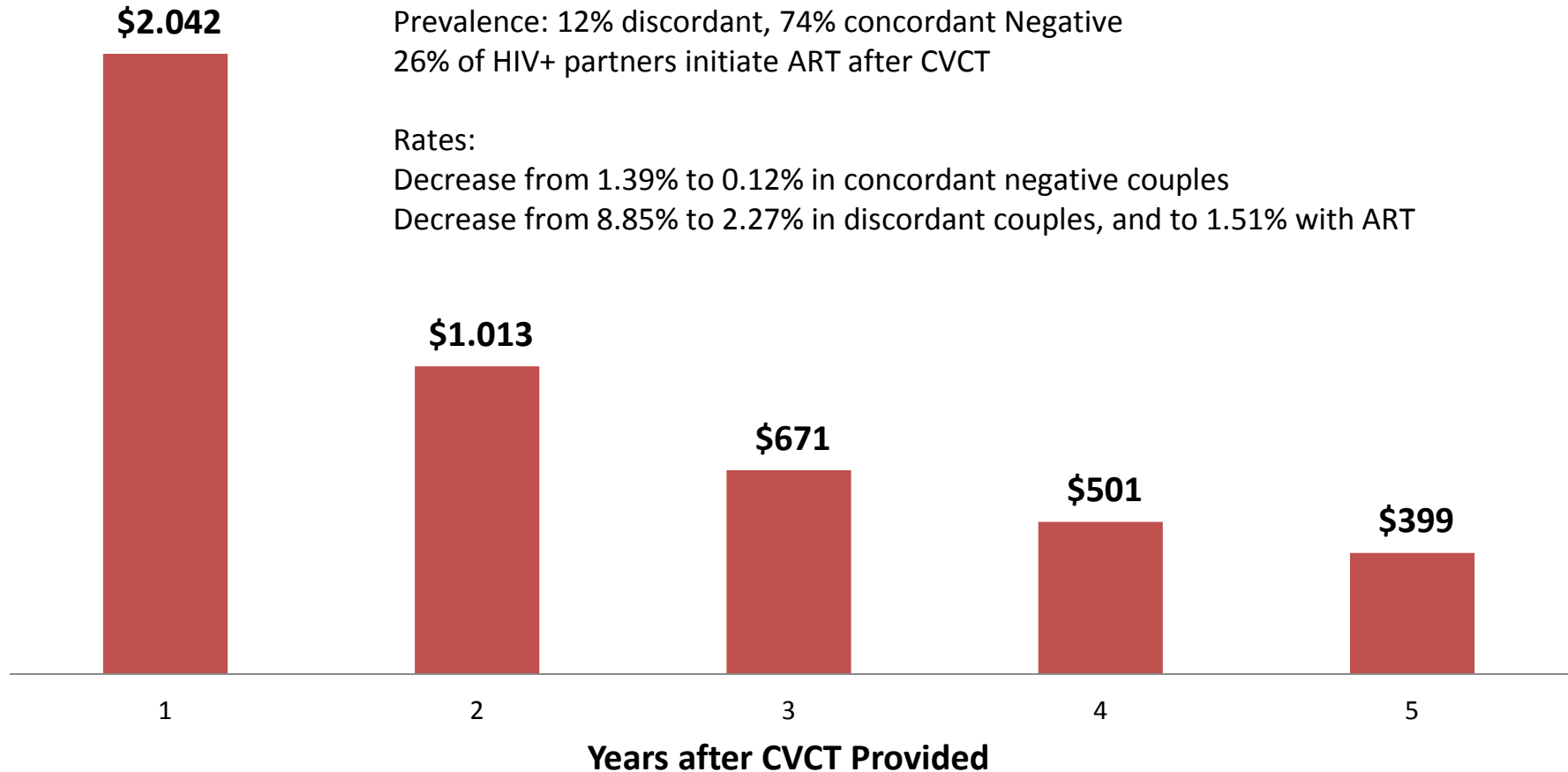
Prevalence: 12% discordant, 74% concordant Negative

26% of HIV+ partners initiate ART after CVCT

Rates:

Decrease from 1.39% to 0.12% in concordant negative couples

Decrease from 8.85% to 2.27% in discordant couples, and to 1.51% with ART

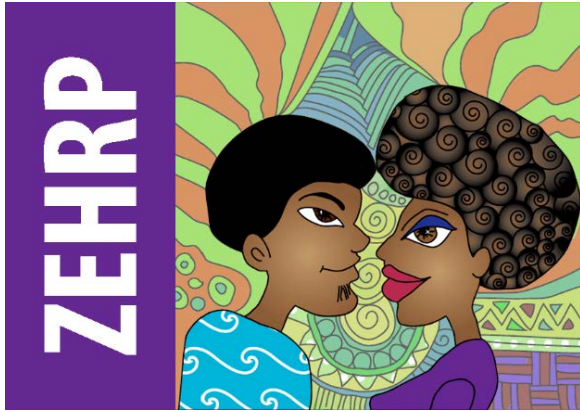


Cost benefit Calculations

- The cost to provide CVCT in Zambian government clinics is \$55/couple and based on real program costs and measured impact the cost to prevent one infection with CVCT is \$399.
- The cost to treat one ART patient is \$136/year: the cost to prevent one infection in discordant couples with ART alone (without CVCT) is \$3022/year
- After CVCT, the cost of preventing one infection by adding ART in discordant couples is \$6355/year

Recommendations

- There are 2 million couples in Zambia, this program has only reached 7% of them
- A national strategy for rolling out CVCT, similar to the strategy for rolling out ART and VMMC, is urgently needed
- This should start with active promotion of CVCT in ART, ANC, VCT, and home-based HIV testing and care programs, and should include active and ongoing promotion in communities until a social norm is established (as has been achieved in Rwanda)
- ART patients should receive CVCT and those in discordant couples should be counseled to avoid transmitting resistant viruses



iavi gratefully acknowledges the generous support provided by the following major donors



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And many other generous individuals from around the world

As of January 2014



This document was produced under Arise—Enhancing HIV Prevention Programs for At-Risk Populations, through financial support provided by the Canadian Government through Foreign Affairs, Trade and Development Canada, and via financial and technical support provided by PATH. Arise implements innovative HIV prevention initiatives for vulnerable communities, with a focus on determining cost-effectiveness through rigorous evaluations.



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