

ART uptake and HIV seroincidence by ART status among HIV discordant couples in Zambia

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HIV discordant couples: 60 – 94% of transmissions

CVCT: ↓ transmission in discordant couples by 2/3

ART-as prevention : 96% efficacy in an RCT (HPTN-052)

Evidence

Research questions

Recommendations

Unknowns

WHO recommendations:

1-3: CVCT and mutual disclosure for all couples

4: counseling for discordant couples on therapeutic ART

5: ART-as-prevention for discordant couples

What proportion of HIV+ partners uptake ART after CVCT?

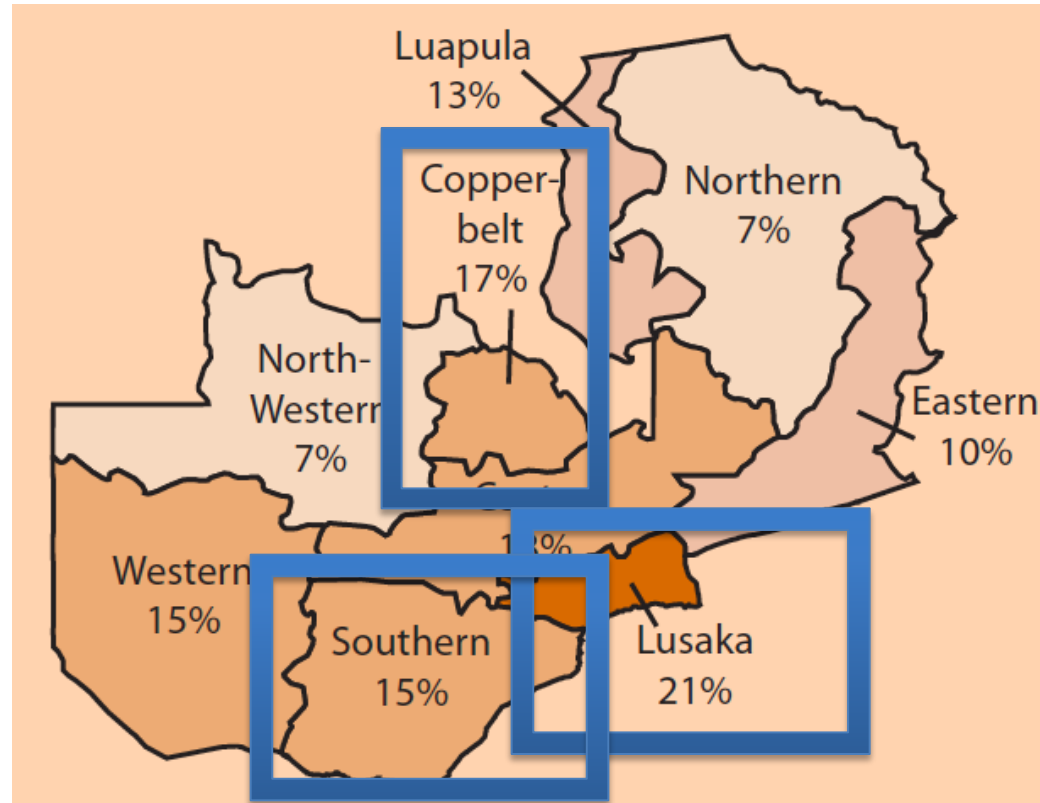
What is ART *effectiveness* in discordant couples?

CVCT Timeline

- **1994:** CVCT offered in stand-alone facilities in Lusaka
- **2007:** CDC-PEPFAR funded expansion to Lusaka and Southern Province government clinics
- **2010:** DFATD funded expansion to Copperbelt government clinics

ART Timeline

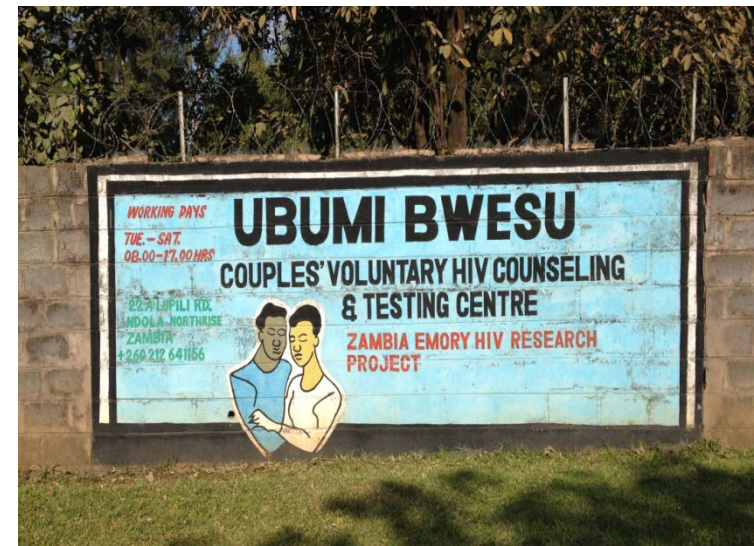
- **2004:** ART scale-up began
- **2012:** ART for HIV+ partner in discordant couples
- **2012:** >95% PMTCT coverage



HIV prevalence, 15-49 year olds

Services and data collection

- **CVCT services:**
 - Joint pre-test counseling, testing, joint post-test counseling
- **Referrals for discordant couples:**
 - ART for HIV+ partners not on treatment
 - Return for follow up 4 – 6 weeks after CVCT & quarterly thereafter
- **Data collected at baseline:**
 - History of prior testing, pregnancy, and ART use (self-report)



ART use at CVCT and after

- 60% of HIV+ individuals had been previously tested alone, of whom 32% were on ART
- Of those not on ART at the time of CVCT, 28% initiated ART after being tested and counseled with their spouse and referred for ART
- These percentages were broadly similar in:
 - Southern province (Monze/Mazabuka)
 - Lusaka
 - Copperbelt (Ndola, Kitwe, Chingola, Luanshya)

Linked Transmission by ART: All Regions

Discordant couples	Sero-conversions	Couple years (CY)	Rate per 100 CY	95% CI	On ART : Not on ART Rate Ratio
All	48	904.9	5.3	3.9, 7.0	
On ART	21	589.1	3.6	2.2, 5.5	0.4 (95%CI: 0.2, 0.7)
Not on ART	27	315.9	8.6	5.6, 12.4	

Transmission by Pre-CVCT vs. Post-CVCT

Discordant couples	Sero-conversions	Couple years (CY)	Rate per 100 CY	95% CI	Post : Pre CVCT rate ratio
Pre-CVCT: Virus + at CVCT or development of antibodies between CVCT and first-follow-up	37	371.6	10.0	7.0, 13.7	0.2 (95%CI: 0.1, 0.4)
Post-CVCT: Development of antibodies after First follow-up	11	533.3	2.1	1.0, 3.7	

Transmission by ART: Pre-CVCT vs. Post-CVCT

Pre- CVCT	Sero-conversions	Couple years (CY)	Rate per 100 CY	95% CI	On ART : Not on ART Rate Ratio
All	37	371.6	10.0	7.0, 13.7	
On ART	15	192.8	7.8	4.4, 12.8	0.6 (95%CI: 0.3, 1.2)
Not on ART	22	178.9	12.3	7.7, 18.6	

Post -CVCT	Sero-conversions	Couple years (CY)	Rate per 100 CY	95% CI	On ART : Not on ART Rate Ratio
All	11	533.3	2.1	1.0, 3.7	
On ART	6	396.3	1.5	0.6, 3.3	0.4 (95%CI: 0.1, 1.5)
Not on ART	5	137.0	3.7	1.2, 8.5	

Transmission by ART: M to F vs. F to M

M to F	Sero-conversions	Couple years (CY)	Rate per 100 CY	95% CI	On ART : Not on ART Rate Ratio
All	25	426.8	5.9	3.8, 8.7	
On ART	10	260.9	3.8	1.8, 7.1	0.4 (95%CI: 0.2, 0.9)
Not on ART	15	165.9	9.0	5.1, 14.9	

F to M	Sero-conversions	Couple years (CY)	Rate per 100 CY	95% CI	On ART : Not on ART Rate Ratio
All	23	478.1	4.8	3.1, 7.2	
On ART	11	328.2	3.4	1.7, 6.0	0.4 (95%CI: 0.2, 1.0)
Not on ART	12	149.9	8.0	4.1, 14.0	

Seroconversions pre and post CVCT among concordant HIV- couples

	Sero-conversions	Couple years (CY)	Rate per 100 CY	95% CI	Post : Pre CVCT rate ratio
Pre-CVCT: Development of antibodies between CVCT and first-follow-up	40	3361.1	1.4	1.0, 1.8	0.09 (0.01, 0.03)
Post-CVCT: Development of antibodies after First follow-up	2	1590.9	0.1	0.01, 0.4	

ART uptake after testing:

~30% prior to CVCT, ~60% after CVCT

- ✓ Similar to other studies, 40% of discordant couples did not uptake ART

He N, et al. Antiretroviral Therapy Reduces HIV Transmission in Discordant Couples in Rural Yunnan, China. PLoS one. 2013;8(11).

ART effectiveness: 58% reduced incidence

- ✓ Similar to discordant couple studies in China (66%) and meta-analysis (64%)



Anglemeyer A et al. Antiretroviral therapy for prevention of HIV transmission in HIV-discordant couples. The Cochrane database of systematic reviews. 2013;4

- ✓ Differences by pre- vs. post-CVCT indicate much of the benefit of ART is related to CVCT




Barriers to adherence:

- ✓ Side effects
- ✓ Forgetting to take pills
- ✓ Uptake barriers
 - ART supply chain issues/stock outs
 - Staff shortages
 - Food insecurity
 - Long distances to clinic and wait times
 - Stigma and discrimination

Summary (1)

- CVCT was associated with a significant reduction in new HIV infections.
 - Pre CVCT 10.0%  Post CVCT 2.1%
 - Rate ratio 0.2 (95%CI: 0.1, 0.4)
- ART use was associated with a significant reduction in new HIV infections
 - No ART 8.6%  ART 3.6%
 - Rate ratio 0.4 (95% C.I. 0.2-0.7)

Summary (2)

- CVCT was associated with a reduction in HIV incidence, whether or not the HIV+ partner was on ART at the time of couples' testing
 - No ART: 12.3%  3.7%
 - Rate ratio 0.3 (95%CI: 0.1, 0.7)
 - With ART: 7.8%  1.5%
 - Rate ratio 0.2 (95%CI: 0.1, 0.5)
- CVCT was associated with a reduction in HIV acquisition from 1.4%  0.1% in concordant negative couples

Recommendations (1)

- CVCT reduces incidence of HIV in discordant couples and should be offered in all settings that provide HIV testing, including antenatal clinics, VCT services, PITC, and home-based testing.
- CVCT reduces incidence in HIV negative partners of ART patients and should be offered to all ART patients.

Recommendations (2)

- Staff training and active outreach to clinic clients and in the community are needed to
 - Promote and provide CVCT
 - Counsel ART patients in discordant couples to ensure adherence to ART & continued condom use
 - Encourage regular follow-up testing with risk reduction counseling in discordant couples

Research is needed

- In 44% of all transmissions in discordant couples, the index HIV+ partner reported ART use
 - Were ART resistant viruses transmitted?
 - If so, what was the impact on viral load and CD4 count in the newly infected partner?
 - VL at time of transmission?

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