



*Eighth in a series, this summary fact sheet presents existing evidence from rigorously evaluated interventions to prevent HIV transmission in developing countries. Results are presented here from the meta-analysis of voluntary counseling and testing studies published in leading scientific journals. In contrast to the many anecdotal reports of best practices, this series provides readers with the strongest evidence available in a user-friendly format. The evidence provides program planners, policy makers, and other stakeholders with information about “what works.”*

### Voluntary Counseling and Testing (VCT)

allows individuals to learn their HIV status through pre- and post-test counseling and an HIV test. VCT is client-initiated, as opposed to provider-initiated testing and counseling (PITC) when health care providers initiate discussion of HIV testing with clients who are seeking health care for other reasons. VCT can be provided through stand-alone clinics or offered through community-based approaches, such as mobile or home-based HIV testing. In addition, counseling for VCT may take place at the individual, couple, or group level. VCT was originally implemented as an individual-level, clinic-based procedure. Different modalities evolved, including community-based and couple-based approaches, to increase access and uptake. Across all of these different strategies, by combining personalized counseling with knowledge of one’s HIV status, VCT is designed to motivate people to change their behaviors to prevent the acquisition and transmission of HIV, reduce anxiety over possible infection,

facilitate safe disclosure of infection status and future planning, and improve access to HIV prevention and treatment services. From 2007-2008, the number of facilities offering VCT increased 35% globally; however, the majority of people globally remain unaware of their HIV status.<sup>1</sup> Despite decades of VCT implementation, additional research is needed to understand the best approaches for increasing uptake of VCT and reduction of HIV-related risks in the context of VCT.

### Effectiveness of Voluntary Counseling and Testing Interventions

The systematic review and meta-analysis by Tedrow et al.<sup>2</sup> examined the effect of VCT on sexual risk behavior in developing countries. Two outcomes were evaluated in meta-analysis: condom use and number of sex partners. Most studies in the meta-analysis compared outcomes between groups who received the intervention and those that did not.<sup>4-8</sup> Two studies assessed outcomes before and after the intervention among the same study population.<sup>3,9</sup>

Effectiveness of VCT Interventions Summary Findings			
Outcome	Number of studies	Odds ratio	Confidence interval (95% confidence level)
<b>Condom use</b>			
Overall condom use	7	1.39	0.97-1.99
Males	5	1.31	0.64-2.66
Females	5	1.17	0.76-1.80
HIV-positive participants (males and females)	2	3.24*	2.29-4.59
HIV-positive males	2	2.69	0.75-9.62
Females	2	4.30	0.58-32.08
<b>Number of sex partners</b>			
Overall number of sex partners	5	0.69*	0.53-0.90
Males	3	0.86	0.57-1.29
Females Only	3	0.70	0.47-1.04
HIV-positive participants (males and females)	3	0.61*	0.37-1.00
HIV-negative participants	2	0.90	0.77-1.06

\* Significant at p<0.05



## Condom Use

7 studies, 5 sub-group results<sup>3-8</sup>

- Overall, VCT did not have a statistically significant effect on reported condom use.
- When stratified by HIV status, people who tested positive for HIV during VCT exhibited increased odds of using condoms compared to HIV-positive people who did not receive VCT or compared to before they were tested. However, the conclusions from this analysis are limited because only two studies were included.<sup>4,7</sup>

## Number of Sexual Partners

5 studies, 4 sub-group results<sup>3-5,7,9</sup>

- VCT had a statistically significant impact on reducing the overall reported number of sexual partners. Participants who did not receive VCT had significantly more sexual partners compared to participants who did receive VCT.
- VCT had a marginally significant effect on number of sexual partners among people who tested positive for HIV. People who tested HIV-positive had fewer sex partners compared to those who did not receive VCT, or compared to before they were tested.
- No results suggest that receiving VCT increased the number of sexual partners.

## How is the Effectiveness of a Voluntary Counseling and Testing Intervention Determined?

The findings presented in this fact sheet come from a recent meta-analysis of 17 studies.<sup>2</sup> In this review VCT was defined as

1. receiving pre-test counseling
2. being tested for HIV, and
3. receiving post-test counseling.

Of the 17 studies, 10 were conducted in sub-Saharan Africa (Zimbabwe, Uganda, Mozambique, Kenya), 4 in East and Southeast Asia (China and Thailand), 1 in Latin America and the Caribbean (Guatemala), and 2 were multi-site studies with locations in Trinidad, Kenya, and Tanzania. Regarding testing modality, 12 studies were clinic-based, 3 were employment-based, 1 involved mobile VCT, and 1 provided home-based VCT as a part of outreach services.



Health workers in Uganda conduct HIV testing as the community mobilizers look on. Credit: © 2009 Titus Ojulong, Courtesy of Photoshare

The review included one randomized control trial conducted in Trinidad, Tanzania and Kenya.<sup>8,10</sup> This trial presented outcomes separately for those who were randomized to individual VCT and those who were randomized to couples VCT. Participants (individuals or couples) randomly assigned to the intervention arm received clinic-based VCT. Participants in the control group watched a 15 minute health information video and participated in a group discussion about HIV transmission. Results indicated that individuals assigned to VCT were more likely to reduce unprotected sex with non-primary partners at follow-up than individuals assigned to health information. Similarly, couples assigned to VCT were more likely to reduce unprotected sex with their enrollment partner than couples assigned to health information.<sup>8</sup>

## Selection Criteria and Rigor Criteria of Studies Included in the Tedrow et al. Meta-analysis<sup>2</sup>

A study had to meet three criteria to be included in the analysis:

1. present behavioral, psychological, or biological outcomes related to HIV prevention in developing countries
2. use either a pre-/post- or multi-arm design
3. appear in a peer-reviewed journal between January 1990 and July 6, 2010.

Studies that did not meet these criteria were excluded.

The studies in the meta-analysis either report effect sizes for each outcome or provide sufficient information in tables or text to calculate an effect size. For the categorical outcomes typically presented in the studies, these data include sample size information for each outcome, and either percentages or frequencies for each response category.

### **What Do the Data Tell Us about Implementing Voluntary Counseling and Testing as Part of a Prevention Program?**

The available evidence suggests that VCT can have an effect on reducing unprotected sex and the number of sex partners. The meta-analysis results indicate that participants receiving VCT were more likely to report reducing their number of sexual partners than those who did not receive VCT. All individual studies showed a positive trend toward reducing their number of sexual partners when comparing those who received VCT to those who did not. Although VCT did not have a significant overall effect on condom use, people living with HIV who received VCT reported an increase in condom use compared to people living with HIV who did not receive VCT.

Two studies reporting on positive and negative life events showed that those who received VCT did not experience a significant increase in negative life events as compared to those who did not receive VCT.<sup>3,10</sup> However, these studies showed that those who received VCT and tested HIV-negative were more likely to disclose their HIV status than those who received VCT and tested HIV-positive. This highlights the importance of discussing strategies for disclosing serostatus among clients who test positive. VCT counselors should work with clients to identify effective ways to disclose their status to sexual partners and provide referrals for additional counseling as necessary. In addition, there were no significant differences in HIV or STI incidence between those who received VCT and those who did not.

The vast majority of studies in this meta-analysis took place in a clinic setting, so differences in modalities could not be compared in meta-analysis. However, one employment-based VCT program demonstrated that providing on-site VCT services increased uptake significantly as compared to providing vouchers for off-site VCT services.<sup>11</sup>

### **What More Do We Need to Know about Voluntary Counseling and Testing Effectiveness?**

The available meta-analytic evidence shows that VCT can be effective at reducing some HIV risk behaviors including overall number of sexual partners and condom use among people living with HIV. Although this review provides us with important information on the effectiveness of VCT on HIV risk behaviors, the majority of studies included in this review had relatively short follow-up periods of 1 year or less. Therefore, it is difficult to assess the long-term effects of VCT on HIV prevention.

Although there was evidence of a positive effect of VCT and increased condom use among people living with HIV, the meta-analysis was limited by inconsistent measurement of outcomes across studies. Some studies reported consistent condom use in the past two weeks, whereas other studies reported unprotected sex in the past month. Furthermore, all studies assessed self-reported condom use, which can be influenced by social desirability, and there was only one randomized trial.

Future research should be conducted on the effectiveness of different modalities of VCT including clinic-, mobile- and home-based testing and counseling. The studies included in this meta-analysis revealed little information about how intervention components were implemented, such as which counseling strategies were employed during pre- and post-test counseling. These details are important in determining what methods are most effective for reducing risky sexual behavior and maximizing the intervention's ability to prevent HIV and increase uptake of VCT. Innovative, effective interventions for HIV prevention will only be successful if people are aware of their HIV status. This highlights the importance of finding the most effective way to implement VCT and its continued use as a tool to prevent HIV and increase access to care and treatment. Additionally, there is a trend towards implementing multifaceted combination prevention approaches in which VCT comprises one component of a larger intervention. This study only evaluated stand-alone VCT interventions. More research is needed to assess the potential synergistic effects of VCT when implemented in combination with other interventions.

Finally, findings from this review must be seen in light of its limitations. Results may be subject to pub-

lication bias, where studies showing positive results are more likely to be published than studies showing negative results. In addition, there is the possibility that some articles that should have been included in the review were not identified by the search methods used.

### Additional Resources

UNFPA. Voluntary Counselling and Testing (VCT) for HIV Prevention.

<http://www.unfpa.org/hiv/prevention/hivprev5b.htm>

World Health Organization. HIV Testing and Counseling. <http://www.who.int/hiv/topics/vct/en/>

USAID. HIV Counseling and Testing.

[http://www.usaid.gov/our\\_work/global\\_health/aids/TechAreas/prevention/counseling\\_testing.html](http://www.usaid.gov/our_work/global_health/aids/TechAreas/prevention/counseling_testing.html)

The Evidence Project. Provider Initiated Testing and Counseling: Rigorous Evidence – Usable Results. <http://www.jhsph.edu/r2p/publications/PITC.pdf>

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*Funding Source: The development of this summary was supported by USAID | Project SEARCH, Task Order No.2, funded by the U.S. Agency for International Development under Contract No. GHH-I-00-07-00032-00, beginning September 30, 2008, and supported by the President's Emergency Plan for AIDS Relief. The National Institute of Mental Health, grant number R01 MH071204, the World Health Organization, Department of HIV/AIDS, and the Horizons Program provided support for the synthesis and meta-analysis. The Horizons Program is funded by the US Agency for International Development under the terms of HRN-A-00-97-00012-00.*

## Terminology and Acronyms

### Confidence interval

The range of values within which the "true value" can be expected to fall.

### Confidence level

The likelihood that the "true value" will fall within the confidence interval.

### Effect size

A measurement of the magnitude of change (e.g., the average point increase in a qualifying examination score from taking a test preparation course).

### Meta-analysis

Analytic method that gathers information from multiple studies and combines them statistically to determine whether an intervention is effective.

### Odds ratio

The ratio of the probability of an event occurring in one group to the probability of the same even occurring in a referent group; for example, an odds ratio of 2.0 for a condom promotion means that those in the treatment group were twice as likely as those in the control group to use condoms in last casual sexual encounter.

### VCT

Voluntary counseling and testing.