

The impact of Voluntary Counselling and Testing

*A global review of the benefits
and challenges*



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KEY MATERIAL

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Contents

BACKGROUND	7
<i>Box 1: The goals of VCT</i>	7
<i>Box 2: The challenges of comparing VCT interventions</i>	8
1. PREVENTION OF HIV TRANSMISSION	11
1.1 HIV INCIDENCE/SEROCONVERSION	11
1.2 STI RATES.....	12
1.3 REPORTED SEXUAL BEHAVIOUR	13
<i>Box 3: Difficulties with analysis and interpretation of data on sexual behaviour</i>	13
1.4 STUDIES DEMONSTRATING COUNSELLING CAN REDUCE RISK BEHAVIOUR	14
<i>Box 4: Studies from sub-Saharan Africa</i>	15
Table 1: VCT outcome studies reporting sexual behaviour from Sub-Saharan Africa.....	16
<i>Box 5: Studies among heterosexuals from industrialized countries</i>	17
Table 2: VCT outcome studies reporting sexual behaviour from industrialized countries	18
1.5 PREGNANCY	18
1.6 VOLUNTARY PARTNER NOTIFICATION AND PARTNER TESTING	19
<i>Box 6: Sharing HIV test result with sexual partner</i>	19
Table 3: Partner testing at MTCT sites	22
1.7 COUPLE COUNSELLING	22
1.8 PREMARITAL VCT	24
<i>Box 7: Barriers to changing sexual behaviour following VCT</i>	24
2. PREVENTION OF HIV TRANSMISSION IN SPECIAL POPULATIONS FOLLOWING VCT	26
2.1 MEN WHO HAVE SEX WITH MEN (MSM)	26
<i>Box 8: Studies among men who have sex with men</i>	26
Table 4: VCT outcome studies reporting sexual behaviour from studies of men who have sex with men.....	27
2.2 SEX WORKERS	27
<i>Box 9: Studies among sex workers</i>	28
2.3 STI CLINIC ATTENDERS	29
2.4 INJECTING DRUG USERS (IDUs).....	29
<i>Box 10: Studies among injecting drug users</i>	29
Table 5: VCT outcome studies reported injecting practices among injecting drug users	30
Table 6: VCT outcome studies reported sexual behaviour among injecting drug users	31
2.5 PRISON POPULATIONS.....	31
2.6 TRUCK DRIVERS	31
2.7 BLOOD DONORS	32
2.8 YOUNG PEOPLE.....	32
<i>Box 11: Young people</i>	32

3. CARE: IMPROVING ACCESS TO MEDICAL, EMOTIONAL AND SOCIAL SUPPORT	35
<i>Box 12: Care needs following VCT</i>	36
3.1 ACCESS TO MEDICAL CARE	36
3.2 ACCESS TO ONGOING EMOTIONAL/PSYCHOLOGICAL CARE	37
3.3 PSYCHOLOGICAL COPING AND ADJUSTMENT (FOR THE INDIVIDUAL AS WELL AS FOR THE FAMILY AND COMMUNITY)	39
<i>Box 13: VCT and coping</i>	39
3.4 SHARING OF HIV TEST RESULT WITH FAMILY AND FRIENDS	40
3.5 POST-TEST CLUBS/SUPPORT GROUPS	42
3.6 ACCESS TO SOCIAL SUPPORT	42
3.7 LEGAL AND FUTURE PLANNING	44
3.8 ACCESS TO INTERVENTIONS TO PREVENT MOTHER-TO-CHILD TRANSMISSION OF HIV, SPECIALIST ANTENATAL CARE AND FAMILY PLANNING SERVICES	45
3.9 ACCESS TO HIV TRANSMISSION PREVENTION SERVICES	45
4. SOCIETAL	46
5. COST	47
5.1 DEVELOPING COUNTRIES	47
5.2 INDUSTRIALIZED COUNTRIES	47
5.3 COST EFFECTIVENESS ASSOCIATED WITH MTCT INTERVENTIONS	48
Table 7: Costs and cost-effectiveness of ARV treatments for MTCT interventions	49
6. NEGATIVE OUTCOMES FOLLOWING VCT	50
<i>Box 14: Negative outcomes following VCT</i>	50
6.1 ABANDONMENT AND ABUSE	51
6.2 MARITAL BREAK-UP	52
6.3 DISCRIMINATION	52
6.4 PSYCHOLOGICAL DISTRESS, STRESS AND DEPRESSION	53
7. OPERATIONAL	55
7.1 UPTAKE, RETURN RATES AND ACCEPTABILITY	55
Table 8: Uptake of VCT at MTCT sites	55
Table 9: Uptake of VCT at MTCT operational sites	57
Table 10: Couple counselling uptake	58
7.2 HIV TESTING METHODS: SIMPLE-RAPID (S/R) TESTING/SAME-DAY TESTING	59
<i>Box 15: Barriers to the uptake of VCT</i>	60
8. CLIENT SATISFACTION WITH THE SERVICE	62
9. COUNSELLING WITHOUT TESTING AND OTHER BEHAVIOURAL INTERVENTIONS	63
10. TESTING WITHOUT COUNSELLING/MINIMAL COUNSELLING	64
11. CONCLUSION	65
APPENDIX	67
Studies from developing countries	67
Studies from industrialized countries	71
Studies among MSM	71
Studies among IDUs	73
REFERENCES	76

Abbreviations

ARV	antiretroviral
AI	anal intercourse
DALY	disability-adjusted life-year
FGD	focus group discussion
IDU	injecting drug users
MCH	maternal child health
MSM	men who have sex with men
MTCT	mother-to-child transmission
NEP	needle-exchange programme
NGO	nongovernmental organization
OIs	opportunistic infections
PLHA	person living with HIV/AIDS
STI	sexually transmitted infection
SW	sex worker
TBPT	Tuberculosis preventive therapy
VCT	voluntary counselling and testing

Background

Many approaches to HIV prevention and care require people to know their HIV status. The importance of voluntary counselling and testing (VCT) has brought about the wider promotion and development of VCT services. However, since the majority of countries where HIV has a major impact are also the poorest, the lack of resources has meant that VCT is often still not widely available in the highest-prevalence countries. For VCT services to be prioritized and for resources to be provided for their development, demonstrating the effectiveness of VCT is essential. One of the difficulties in evaluating VCT's effectiveness is the complexity of the VCT process and the wide range of possible outcomes. The term VCT has also been used in many contexts to cover a broad spectrum of interventions. In this article it includes interventions that comprise a minimum of pre- and post-test counselling associated with testing. However, it acknowledges that many VCT services offer ongoing/supportive counselling.

This paper examines the diverse roles of VCT, considers the various outcomes of VCT that can be evaluated and discusses the limitations and difficulties associated with VCT evaluation.

Drawing on published and unpublished literature, conference abstracts and case studies, this paper concentrates on information from developing countries. While some examples from industrialized countries are mentioned, this information is not exhaustive, hence review articles providing more complete information are cited.

Box 1 : The goals of VCT

- 1. Prevention of HIV transmission**
 - From +ve tested people to untested or -ve partners
 - From +ve tested mother to child
- 2. Prevention of HIV acquisition**
 - By -ve tested people from +ve or untested partners
- 3. Early and appropriate uptake of service**

+ve-tested people

 - Medical care (including ARV therapy, treatment of OIs, prevention of OIs and HIV-associated infections and screening for HIV-associated infections and tumours)
 - Family planning (including counselling about reproductive choices)
 - Emotional care (including individual, couple and family support)
 - Counselling for positive living (nutrition, ongoing counselling, disclosure issues and identification of safety network)
 - Social support
 - Improved coping and planning for the future
 - Legal advice

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-ve-tested people

- Emotional care
- Family planning (including counselling about reproductive choices)
- Improved coping and planning for the future

4. Societal benefits

- Normalization of HIV
- Challenging stigma
- Promoting awareness
- Supporting human rights

5. Counselling for adherence

- Adherence to ARVs and preventive therapies
- Coping with adverse effects
- Counselling about adherence in MTCT interventions

Limitations of this review

VCT services, which are available for many different groups of people in various settings, vary greatly in their aims. This makes comparing VCT interventions difficult and sometimes misleading. The challenges of comparing interventions are summarized in Box 2.

Box 2: The challenges of comparing VCT interventions

➤ Different interventions

The content and quality of VCT services offered within and across countries vary considerably. It may therefore be inappropriate to compare in-depth, long-term counselling services, where follow-up social and medical support is provided, for example, with routine VCT associated with STI clinics, where such services are not available.

Factors that may influence outcomes of VCT interventions

- Theoretical framework of counselling
- Content and quality of counselling
- Number of counselling sessions undertaken
- Individual, couple or group pre-test counselling
- HIV testing methods employed in VCT sites (same-day simple/rapid testing versus ELISA)
- Associated support services available to VCT sites
- Anonymous versus confidential versus mandatory testing and reporting of results
- Age/emotional maturity of clients
- Socio-economic factors (may affect access to treatment, prophylaxis)

➤ Different populations

Differences in impact and outcomes will be expected when assessing VCT interventions in different populations. In industrialized countries, many of the studies looking at VCT and sexual behaviour change have been carried out among IDUs, homosexual men and attenders at sexually transmitted infection clinics. In sub-Saharan Africa, the majority of studies have been among the general population attending VCT centres, women attending antenatal clinics and among sex workers. It is difficult to make comparisons between these groups as patterns and determinants of behaviour vary considerably. ----->

➤ Time considerations

Timing of evaluation in the development of the service

Many operational VCT projects are evaluated when they are established, and research projects may set up VCT services to specifically look at their impact. This means that evaluations often take place before services have been fully developed or before communities have become accustomed to the intervention or realized its possible benefits. This is particularly important in countries where VCT is a new service or where counselling has not previously been a component of medical care and support.

If the evaluation is repeated when services are well established, different outcomes may be achieved. For example, when setting up the first VCT service in Lusaka, Zambia many people who attended during the first two years were symptomatic and therefore the seropositivity rate of attenders was very high (>60%). People, at this stage, attended for testing to confirm what they suspected or they were referred by health care workers, friends or relatives who worried that they might have HIV. As the service developed and people became more aware of VCT's role in HIV prevention, the seropositivity rate among attenders fell to <25%. Many asymptomatic young people wished to know their HIV status and there was less stigma associated with testing. Furthermore, as accessible treatments became available people were less reluctant to be tested since they felt there was something that could be offered if they tested positive (Kara).

In Uganda the population seeking VCT has also changed over time. In 1992 66% of clients were male. By 1997 more women were seeking VCT and the proportion of men had fallen to 51%¹. Seropositivity rates of attenders also changed; in 1990 35% of female and 23% of male attenders were seropositive. By 1998 seropositivity rates of attenders had dropped to 26% for females and 14% for males.

Maturity and magnitude of the epidemic

The maturity of the epidemic may have an important impact on outcomes. This is particularly true for uptake and return rates. In areas where the epidemic is new, ignorance, denial and stigma may be more closely associated with HIV testing than in countries where the epidemic is more well established.

Countries where the epidemic is mature may also be experiencing a great impact from HIV in terms of morbidity and mortality and other sequelae such as rising numbers of orphans. These visual and practical consequences of HIV may be important in determining how people perceive their own risk of infection, and hence their willingness to undergo VCT.

Countries where HIV-2 is the prominent infection may have high seroprevalence rates but low levels of morbidity, therefore fewer people will be prompted to test for HIV since they see less evidence of vulnerability in their community.

1. Prevention of HIV transmission

1.1 HIV incidence/seroconversion

The most definitive measure of VCT's effectiveness in reducing HIV transmission is the *rate of new HIV infection* in people following VCT, compared with a control group who were tested but were unaware of their serostatus. However, because of ethical considerations and practical difficulties in performing such studies, estimates of seroconversion rates are used, or comparisons are made with other seroincidence/seroprevalence rates from other studies.

An early, community-based study of patients with symptomatic HIV disease reported high rates of unprotected sexual intercourse and, subsequently, high HIV transmission in discordant couples following VCT (Hira, 1990²). People living in the same household as index patients with AIDS or symptomatic HIV disease in Lusaka, Zambia were clinically and serologically evaluated for HIV-1 infection. In the 150 households of male index cases, 92 (61.3%) of their spouses were infected, compared with 57 (73.1%) of the spouses of the 78 female index cases. Of the 52 discordantly infected couples followed for 1 year, 46 continued to have unprotected vaginal intercourse and 11 (21.2%) of these seroconverted to HIV. The study suggests that there is ongoing risk of HIV heterosexual transmission as infection progresses in the infected partner. In this study, VCT failed to help couples to adopt safer sex practices and prevent seroconversion. The study's aim was descriptive rather than to provide an intervention to prevent HIV transmission. The authors note that more effective counselling was needed.

In a study from Kinshasa, Democratic Republic of the Congo (former Zaire), intensive couple counselling following testing was shown to be effective in changing sexual behaviour in serodiscordant couples. The counselling resulted in a low rate of HIV seroconversion – 3.1% per 100 person-years of observation in Congolese married couples with discordant HIV status who attended VCT. (Kamenga et al., 1991³). While this was an uncontrolled study, the low rate of seroconversion was similar to that documented in other prospective studies of married couples with serodiscordant results from the United States, who were counselled to use condoms (Goedert et al., 1987⁴).

In a prospective study carried out in Rwanda, 60 serodiscordant couples were identified, of whom 53 were followed up for an average of 2.2 years. During the follow-up, 2 of the 23 seronegative men and 6 of the 30 seronegative women seroconverted (seroconversion rates of 4 and 9 per 100 person-years). The rate was less than half that estimated for similar women in serodiscordant couples where only the women had received VCT and the men were tested but unaware of their HIV status (Allen et al., 1992⁵).

A study of 1458 women, carried out by the same group, compared women who had been tested but whose partners were not aware of their status with women whose partners had also received VCT and were aware of their status. In the latter group, HIV seroconversion rates decreased significantly (from 4.1 to 1.8 per 100 person-years $P < 0.4$) (Allen et al., 1992⁶).

In Pune, India, the seroincidence rate in 1995 was estimated as 18% per annum among patients who attend STI (sexually transmitted infection) clinics (Brookmeyer et al., 1995⁷). At the same site the role of VCT in HIV prevention among those who tested negative was examined (Bentley et al., 1998⁸). Following VCT the risk of seroconversion was 6.1 per 100 person-years.

Rates of seroconversion were examined in 144 heterosexual discordant couples recruited in California in the United States who were followed up for an average of 1.34 years (Padian et al., 1987⁹). Couples were usually counselled and tested in their own homes, and intensive follow-up counselling and support were available. Both condom use and sexual abstinence increased over time. Most behaviour change was initiated between intake and first follow-up visit. No seroconversions were observed after 193 couple-years of follow-up. In this study, intensive couple counselling combined with social support appeared to be a very effective means to promote and sustain behaviour change among HIV-infected individuals and their heterosexual partners. It must be noted that the couples in this study were living in stable relationships, and in industrialized countries the gender imbalance in sexual negotiation may be less marked. In many high-prevalence countries women who are seropositive may find it difficult to ensure safer sex practices and prevent HIV transmission to uninfected partners.

1.2 STI rates

An appropriate proxy-indicator of adoption of safer sex practices (and hence reduction of HIV transmission) is incidence of STIs following VCT.

A study of Rwandan women recruited from antenatal and paediatric outpatient clinics demonstrated that VCT was associated with reduced rates of gonorrhoea (the prevalence of gonorrhoea decreased from 13% to 6% $P < 0.05$) among seropositive women following VCT. The greatest reduction in gonorrhoea was among those who said that they used condoms (16% to 4% $P < 0.05$) (Allen et al., 1992).

In the United States, however, a study from an STI clinic in Miami showed a decrease in STI rates following VCT for those who tested seropositive, but a 103% increase in rates of STI infection in those who tested seronegative. The authors conclude that this may be partly due to the inadequate counselling received by those who tested seronegative (Otten et al., 1993¹⁰).

Another study carried out among pair-matched seropositive and seronegative STI attenders in London ($n=218$) showed no significant association between serostatus and incidence of STI (Geroge et al., 1998¹¹).

1.3 Reported sexual behaviour

The primary aim of VCT is preventive – to help people change their sexual behaviour so as to avoid transmitting HIV to sexual partners if seropositive, and to remain seronegative if negative. Therefore, many studies that try to assess the effectiveness of VCT have looked at changes in reported sexual behaviour following testing. There are, however, methodological problems associated with these types of studies. Attempts at obtaining information on sexual behaviour must rely on self-reporting and there are few opportunities for checking information obtained against that from other sources.

Box 3: Difficulties with analysis and interpretation of data on sexual behaviour

> Different methods of collecting information

There may be considerable inaccuracies and inconsistencies in collecting information about sexual behaviour. This can be compounded by different data-collection methods. Studies use a variety of data-collection methods, including self-administered questionnaires, interview-administered questionnaires, in-depth qualitative interviews, summaries of clinical notes, telephone interviews, postal surveys and methods using “flash cards”. Different studies also report different sampling methods, length of follow-up, follow-up rates and processes, making comparisons between studies a challenge.

> Cultural differences

Attitudes about sexual behaviour differ considerably and may influence reporting. In countries where discussing sexual issues is taboo, people may be reluctant to reveal intimate details or they may under-report sexual behaviour that is not “approved of” or illegal (e.g. possible under-reporting of homosexuality in countries in sub-Saharan Africa, where it is criminalized). Other populations, which have strong cohesion and identity (such as homosexual men in San Francisco) may be less inhibited about discussing sexual practices.

Interpretation of sexual terms may also vary between and within populations and may make interpretation of self-administered questionnaires difficult. For example, in Zambia during in-depth interviews it was found that some men considered themselves to be “abstinent” if they were only having sex with their wife, whereas other interviewees interpreted abstinence as not having sexual intercourse with anyone. Definitions of sexual practices may also vary with translation (which often occurs in studies where the participants are interviewed in their own language and the questionnaires are subsequently translated into English for analysis).

> Gender differences

In most studies of reported sexual behaviour women report fewer sexual partners than men. In a national survey of sexual behaviour carried out in the United Kingdom the mean lifetime number of sexual partners was reported at 9.9 for men and 2 for women (Wellings et al., 1994¹²). Similar differences – a higher number of lifetime sexual partners

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reported by male than female students – were described in a survey among university students in Lusaka, Zambia and London, the United Kingdom (Baggaley et al., 1997¹³). These differences may be in part due to the social acceptability of men reporting multiple sexual partners, and male sex with sex workers.

The ability to change sexual behaviour, as well as barriers to these changes, may also vary considerably between countries and groups studied. For example, the use of condoms has been commonplace in many European countries for several decades whereas, in developing countries, condoms are often unavailable and their use still very low. For example, until recently, condoms have often not been widely available in rural areas in sub-Saharan Africa. Even when they were distributed as part of a social marketing policy, condom use was still relatively low – 2.7% of rural women and 6.9% of rural men in Zambia said that they or their partner had used condoms (DHS, 1996¹⁴). This, in part, may be the result of economic and social factors as well as unfamiliarity with condoms. In some countries, religious or cultural beliefs preclude their widespread use or distribution.

➤ **Different populations**

Because of the wide range of groups studied it is difficult to make comparisons, or to perform meta-analyses of outcomes related to sexual behaviour (Weinhardt et al., 1999¹⁵). It may be difficult or inappropriate to compare condom use among discordant gay couples from New York with discordant injecting drug users (IDU) heterosexual couples from the Ukraine.

1.4 Studies demonstrating counselling can reduce risk behaviour

Developing countries

Studies demonstrating that sexual risk behaviour reduces significantly with counselling come from a number of developing countries. The recent multi-centre VCT efficacy trial was the first randomized trial of HIV counselling and testing from developing countries. It demonstrated that VCT resulted in greater behaviour change than health education alone. However, seropositive people were more likely than seronegative to show significant changes in behaviour. Details of this study and other studies from developing countries can be found in the Appendix (page 67).

Box 4 : Studies from sub-Saharan Africa

Summary: Background

- HIV transmission is largely due to heterosexual transmission. Although some groups, such as sex workers, are more severely affected than others are, HIV affects the general population and is not just a problem that is limited to minority or vulnerable groups. The male–female ratio is approximately 1:1. Women have higher rates of infection in the younger age groups.
- The largest burden of HIV is in sub-Saharan Africa – over 70% of people living with HIV live in the region. Although the range of HIV seroprevalence in these countries is broad, many other countries are experiencing the widespread financial and social impacts of HIV. These include the deaths of men and women between the ages of 20 and 40 – at a time when they are most economically productive – as well as a growing number of orphans. The average adult seroprevalence in sub-Saharan Africa is 8% (range <0.5-35%)¹⁶.
- Counselling services prior to HIV were rare and the concept of “formal” counselling was unfamiliar to most people. Often there were well-established systems for communicating and discussing health problems and issues concerned with adolescent sexuality, commonly involving community elders or trusted family members as the educator. However, HIV has not often been adequately incorporated into these structures. Subsequently, HIV counselling services have been developed, though often in a piecemeal fashion or associated with research projects. However, VCT services are now being expanded – often associated with MTCT interventions

Summary: Efficacy/sexual behaviour change

- Studies among serodiscordant couples who are counselled and tested together show significant reductions in seroconversion following VCT.
- The *majority* of studies carried out among individual and couple attendees at VCT show that people can make some changes in sexual behaviour to reduce HIV transmission, but long-term changes are difficult without both partners being aware of their status.
- Although there are barriers and difficulties for both men and women, most studies report that women, in particular, find it difficult to practice safer sex (or negotiate with their sexual partners to use safer sex methods) following VCT.
- Most studies in sub-Saharan Africa have been carried out when VCT services are initially set up and longer-term analysis would be valuable.

Table 1: VCT outcome studies reporting sexual behaviour from sub-Saharan Africa

Author (year)	Site	N	Results
Allen, Tice (1992)	Kigali, Rwanda	53+/- 838 F	↑ condom use following VCT among +/- couples who both received VCT cf. tested couples where women alone knew status
Allen, Serufulria (1992)		1458	+/- couples ↓ seroconversion following VCT if both partners knew status cf. when only F knew status. ↓ STI rates among +ve
Kamenga (1991)	Former Zaire	149	Serodiscordant couples. ↓ seroconversion following VCT
Temmerman (1990)	Nairobi, Kenya	1507	Pregnant women. No change in sexual behaviour between +ve and -ve women
Muller (1992)	Kampala, Uganda	872	Couples & individuals ↓ in sexual risk behaviour in all groups following VCT
Moore (1993)	Kampala, Uganda	3000	Individuals. ↓ in sexual risk behaviour in all groups following VCT
TASO (1994 & 7)	7 TASO centres, Uganda	730	Individuals. All groups ↓ sexual risk behaviour following VCT (M reported ↑ condom use and F ↑ abstinence)
Hira (1990)	Lusaka, Zambia	52	Serodiscordant couples. 46 of 52 +/- couples followed for 1 year continued to have unprotected sex, and 11 (21.2%) of these seroconverted to HIV.
Baggaley (1994)	Lusaka, Zambia	500	Individuals. All groups decreased sexual risk behaviour following (+ve and -ve)VCT
Baggaley (1998)		277	Individuals. ↓ in risk behaviour. F expressed difficulties in adopting safer sex practices
Muller (1995)	Bangkok, Thailand	600	+ve reported fewer sex partners and more consistent use of condoms than unaware +ve
Ladner (1996)	Kigali, Rwanda	848	↑ condom use by women(+ve > -ve).
© Multi-centre study (1998)	Kenya, The United Republic of Tanzania, Trinidad	3120	Individuals. All groups decreased sexual risk behaviour following VCT cf. Health education only group (+ve > -ve).
Lutalo (2000)	Rakai, Uganda	6096	↑ condom use by women(+ve > -ve). N/S ↑ in condom use among +ve versus -ve men ↑ condom use by new condom users (+ve M&F) cf. UA +ve M&F)

+/- = serodiscordant
 F = female
 M = male
 N/S = not-significant
 UA = unaware (tested but unaware of HIV status)
 ↓ = decreased
 ↑ = increased

Industrialized countries

Box 5: Studies among heterosexuals from industrialized countries

Summary: Background

- Although there are increasing numbers of people with HIV who are infected with HIV by heterosexual transmission the largest numbers of cases are seen in people with “risk factors”:
 - ◆ Men who have sex with men
 - ◆ Injecting drug users (IDUs)
 - ◆ People from Africa living in Europe
- In Western Europe the adult seroprevalence rate is 0.25% and in the United States 0.56% with less than 20% of those infected being women¹⁷.
- HIV prevalence remains relatively low among the general population and in many communities it is perceived as a problem of marginalized groups.
- The majority of the studies that have been carried out industrialized countries have been among men who have sex with men (MSM) and IDUs.
- VCT services are often available to the general population as well as for special groups in Europe and the United States. Uptake of VCT is usually low among the general population, though increasing numbers of women are being tested routinely for HIV at antenatal clinics.
- Services for persons living with HIV/AIDS (PLHAs) are usually well developed with the majority of people being eligible for combination antiretroviral therapy.

Summary: Efficacy/sexual behaviour change

- In general the findings are mixed, but many provided at least some evidence supporting the ability of VCT to motivate risk-reducing behaviour, however, some did not. The pattern of results varied substantially across, and within, study populations and were often limited by methodological weaknesses.
- Counselling of serodiscordant couples has, however, been shown to be very effective in preventing HIV transmission.
- VCT in STI clinics and among students has only limited effect in changing sexual behaviour.
- Many of the studies occurred in settings with low seroprevalence. Authors thought that people attending VCT may have already changed their behaviour prior to seeking testing, or did not perceive themselves to be at risk from HIV infection.

Table 2:
VCT outcome studies reporting sexual behaviour from industrialized countries

Author (year)	Site	N	Results
Wenger (1992)	Los Angeles, USA	370	Students. ↑communication following VCT no change in sexual behaviour
Wenger (1991)	Los Angeles, USA	186	STI attendees ↓# sexual partners ↑ condom use following VCT
Wilson (1996)	Brooklyn, USA	808	F STI and FP attendees no change in condom use or # sexual partners following VCT
Icovics (1994)	New Haven, USA	230	Attendees no change in condom use or # sexual partners following VCT
Landis (1992)	Durham and Wake counties, USA	56	No change in sexual behaviour following VCT
Padian (1993)	San Francisco, USA	149	Serodiscordant couples. ↓ in sexual risk behaviour following VCT. No seroconversions
Otten (1993)	Miami, USA	5 522	STI attendees. ↓ STI in +ve ↑ in STIs in -ve

1.5 Pregnancy

Knowledge of HIV status can enable women to make informed decisions about whether or not to have children. Early in the epidemic there were no effective interventions to prevent mother-to-child transmission (MTCT) of HIV and women were sometimes advised by health care workers not to have children. Since the publication of the results of the ACTG 076 trial in 1994 (Connor et al., 1994¹⁸) most seropositive women in industrialized countries are offered antiretrovirals (ARVs) to prevent MTCT and its rate is now low. Before ARV interventions were available the incidence of pregnancy among women following VCT had been examined in three studies from the United States and two from Africa. The study of women and their husbands/partners in Rwanda (Allen et al., 1993)¹⁹ showed that VCT was associated with increased use of condoms and reduced rates of gonorrhoea and HIV. However, pregnancy rates were similar for women testing seronegative and those women testing seropositive. There was also no differences found in pregnancy rates in seropositive and seronegative women in Kenya (Kiragu et al., 1990²⁰).

The three studies from the United States also revealed similar rates of pregnancy among women who knew they were seronegative and those who knew they were seropositive (Sunderland et al., 1988²¹, Selwyn et al., 1989²² and Cowan et al., 1990²³).

Rates of termination of pregnancy were examined in one study that was also carried out before the recommendations to prevent MTCT were introduced (Sunderland et al., 1992²⁴). Seropositive women were more likely to seek termination of pregnancy (TOP) than seronegative women. A study of female IDUs however, showed no differences in the rates of TOP among seropositive and seronegative women (Pivnick et al., 1991²⁵).

Since ARVs to prevent MTCT are now widely available in industrialized countries, and are becoming increasingly available in some developing countries, counselling seropositive women about pregnancy has a different emphasis. (See section 3.8).

1.6 Voluntary partner notification and partner testing

One of VCT's main aims is to reduce HIV transmission by encouraging changes in sexual behaviour following testing. It is therefore important to be able to share HIV status with one's sexual partner in order to make appropriate changes in sexual behaviour.

Box 6: Sharing HIV test result with sexual partner

Summary

It is difficult to make long-term changes in sexual behaviour without being able to share HIV test results with a sexual partner or partners. Disclosure to a sexual partner or partners can be viewed as an important indicator of understanding and acceptance of HIV status. There are, however, societal factors that have a strong influence on rates of disclosure, particularly for women. The views of counsellors may also influence disclosure rates.

- **Disclosure following VCT**

Most studies show that the majority of people share their HIV results with someone and disclosure rates increase over time as people adjust to their test result. Levels of disclosure to spouse/sexual partner/s are, however, usually lower. In studies from developing countries disclosure rates range from 24-79%. Partner testing is lower (<1-75%). Studies from industrialized countries also show that not all women are able to tell their partners that they have been tested.

- **Disclosure following VCT in antenatal settings**

There is increasing emphasis on offering VCT to women attending antenatal clinics to enable them to take interventions to prevent MTCT. Thus, many studies are looking at disclosure to male partners in this context. Disclosure rates – and subsequent testing rates of sexual partners – vary considerably. It is often difficult for women in developing countries to share their HIV status with their partners/spouses and testing women alone (rather than as a couple) does not facilitate disclosure. Innovative ways of involving men in antenatal testing should be sought so that women are not blamed or isolated if they are found to be seropositive. If men can be offered VCT they can take an informed and active role in decisions around the future, family planning and coping with MTCT interventions.

- **Couple counselling**

High rates of sero-discordancy among married couples have been noted in many studies. Couple counselling overcomes the problems of disclosure to partners and has been

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a successful intervention where it has been promoted, although in some countries there are barriers to attending.

- **Premarital VCT**

Pre-marital testing is being promoted in some countries, especially by religious organizations. There are no data on the long-term outcomes of this strategy.

- **Disclosure and domestic violence**

The fear of emotional and physical abuse as well as abandonment are important factors in low rates of disclosure among women, particularly from Asia and sub-Saharan Africa. Counsellor training could include activities that address violence awareness.

- **Counselling clients about disclosure**

Often counselling clients about disclosure is just an instruction or suggestion to disclose and clients are not engaged in practical strategies of how to do this, i.e. problem-solving or role-playing. This may be a mitigating factor in the lower effectiveness of counselling interventions.

Partner disclosure from VCT sites

Developing countries

A study from Lusaka, Zambia, showed that while many people expressed worries about sharing HIV test results, with time, the majority – both men and women – were able to tell someone about their status. There was no significant difference between those testing seropositive or seronegative. Few said that they had experienced difficulties following disclosure. However, less than 50% of people with positive results were able to tell their sexual partners (Baggaley et al., 1997²⁶). A very small percentage (<5%) of partners subsequently came for counselling and testing. Inability to discuss HIV test results with a sexual partner makes adopting safer sex practices more difficult. Many people who had not told their partner said that this was because they were ashamed of being seropositive or having gone for a test. Those who were seronegative said that even going for a test would make their partner suspicious. Some said that they feared blame, abandonment or abuse if their partner found out they were seropositive. Although both women and men expressed these worries, women more commonly expressed them.

In Rwanda, a prospective study of seropositive women found that after testing, 75% said that they did not expect a supportive response from their partners when they told them about their status. However, when they were re-interviewed three years later, acceptance, understanding and sympathy were the most common reactions of their partner after disclosure. Nevertheless, 21% had still not been able to tell their partner. Of the men, 48% had tested for HIV following their partner's disclosure of her seropositive status (Keogh et al., 1994²⁷).

In Zimbabwe, informing marital partners was found to be a major problem for most people with HIV (Meursing et al., 1995^{28,29}). The main reasons for non-disclosure were relatively good health and emotional status, denial of diagnosis, fear of rejection, limited knowledge of and belief in strategies to "live positively with HIV", unacceptability of condoms and safer sex, and women's economic dependency and lack of power in sexual situations. However, with "enhanced counselling" 75% were able to disclose to their partner/spouse.

In another study from Zimbabwe, out of 3 381 men who were enrolled in a factory, worker cohort 56% returned for their HIV test result (Dube et al., 2000³⁰). Although all men were encouraged to bring their sexual partners for VCT, only 7% did so. Twelve focus-group discussions (FGD) were conducted and several reasons were given for this.

- They experienced difficulties with introducing the subject of VCT because of the uncommunicative nature of their relationships.
- They feared that sero-discordant results would lead to divorce.
- They feared that results would reveal their partners' or their own past, present or future infidelities.
- They thought that VCT was not a high priority compared with other issues in their lives.
- Their wives were unable to attend the urban VCT site because they lived in rural areas.
- The men reported that the wives would assume they were negative if their husband was negative.
- The men reported a lack of interactive communication between their counsellors and themselves during pre-test counselling and they did not feel able to confide in them.

In Burkina-Faso, only 24% of people who were seropositive and living in a stable relationship were able to tell their partner about their result. The authors state that in this mainly Muslim community non-disclosure may be justified in some situations, but acknowledge that it is a major obstacle to HIV prevention (Badini et al., 1998³¹).

Industrialized countries

A study from London also revealed differing patterns of disclosure. Although most people were able to share their HIV status with someone it was often difficult for seropositive people to share their HIV status with their sexual partner, especially if the partner was a casual or non-primary sexual partner (Miller et al., 1998³²). Similar results were found in a study of MSM from the United States (Huggins et al., 1991³³). Following VCT, MSM were much more likely to tell regular partners than casual sexual partners.

Partner disclosure and partner testing following antenatal testing

VCT services are being widely developed in MCH services in conjunction with MTCT interventions. In these settings women are usually tested alone, yet important decisions relating to their status should ideally be shared with their partner. In a small study from the Western Cape in South Africa less than 50% of seropositive women were able to disclose their HIV status to anyone and only a minority of these discussed it with their partner (Sigxaxhe, 2000³⁴). In the MTCT programme in Botswana disclosure to partners is also reported as being low and very few men are either tested together with their partners/wives or agree to test at a later date (Mazhani et al., 2000³⁵).

Information from 13 study sites offering VCT and MTCT interventions – from west (Abidjan, Bobo-Dioulasso), east (Addis Ababa, Nairobi, Mombassa, Dar Es Salaam) and southern Africa (Blantyre, Lusaka, Harare, Soweto, Durban) and 1 from Thailand – showed low numbers of men agreeing to testing in most settings (Cartoux et al., 1998)³⁶.

Table 3: Partner testing at MTCT sites

Site	% men tested (whose partners tested +ve)
All west African sites	<1%
South Africa	5%
Dar Es Salaam	10%
Blantyre	10%
Lusaka	10%
Bangkok	75%

In a study from Nairobi, Kenya, women were offered VCT when they attended for antenatal care. Women were advised to tell their sexual partner their HIV status and to bring their partner for further counselling and testing, if desired (Temmerman M, et al., 1995³⁷). However, of the 324 women who were found to be seropositive only 66 (27.2%) communicated their test result to their partner and only 21 partners subsequently tested (5, or 23.8%, were seronegative). Because of the adverse outcomes of partner disclosure that occurred during the study, the policy of partner notification was changed and women were counselled to make their own choices about whether or not to involve their partner. Subsequently, only 109 out of 311 (35%) of women with a seropositive result ever returned for their test result and only 9 (3%) partners came for VCT.

In Rwanda, of the 1 223 women screened for HIV at an antenatal clinic 70% of the women who had post-test counselling said that they wished their partners to be tested for HIV. However, despite the encouragement of the counselling staff and the available infrastructure only 8% of the partners were tested (Ladner et al., 1996³⁸).

Results from a small qualitative study from the United States showed that, following antenatal VCT, although all women had disclosed their HIV status to their partners, only 56% of seropositive and 44% of seronegative women knew their partner's HIV status (Lester P et al., 1995³⁹).

1.7 Couple counselling

Developing countries

Many studies have shown that a significant proportion of couples in steady relationships have *serodiscordant* HIV test results:

- In a study from Zambia there were 52 discordantly infected couples from the sample of 245 (21%) (Hira et al., 1990).
- In the multi-centre study (N=589) 17% were serodiscordant (Coates et al., 2000).
- At AIC in Kampala, Uganda, of 1 853 couples that attended together 7% were serodiscordant (Baryarama et al., 1998⁴⁰).
- A study from rural Uganda showed that 7% of couples were serodiscordant (Carpenter et al., 1999⁴¹). The risk of seroconversion, in this study, was found to be 105.5 per 1 000 person-years for seronegative women married to seropositive men and 51.7 for seronegative men married to seropositive women.

This highlights that married adults, particularly women with seropositive partners, are at very high risk of HIV infection. Married couples should be encouraged to go for HIV counselling together so that serodiscordant couples can be identified and counselled to help prevent transmission to the uninfected partner. Offering VCT to couples overcomes the problem of sharing test results. Couple counselling and testing is aimed at enabling the couple to negotiate appropriate changes in sexual behaviour together. It also helps them plan together for their future and that of their dependants, with the support from their counsellor at both pre- and post-test. Couples seen together can be counselled to avoid blame and prepared, prior to testing, to make risk assessment and reduction plans together. The majority of studies of couple counselling among serodiscordant couples report successful outcomes in terms of changing behaviour to prevent HIV transmission to negative partners.

Use of this model in Rwanda showed that, compared to other VCT services, a far higher proportion of couples wanted to receive HIV counselling and testing together (Allen, 1993 see section 1). Furthermore, data from Rwanda have shown that use of VCT services by cohabiting couples is effective in reducing HIV transmission within HIV discordant couples and diminishing the acquisition of new HIV infections in seronegative couples (Allen et al., 1992; Allen et al., 1993 see section 1). However, in other settings, often there has been considerable resistance to this approach (Baggaley et al., 1997⁴²). Reasons for poor communication between partners are in part due to traditional beliefs about discussing sensitive subjects and roles of men and women within marriage. Teaching about HIV and gender awareness to young people may help future generations, but for women, in particular, who are currently in sexual relations, counselling and testing may fail to protect them from HIV infection from their spouses. In Uganda, although couple counselling was not popular when the services was set up – in 1992 less than 9% of attendees were couples – this services has become more popular, with 26% of couple attendees in 1996 (UNAIDS, 1999⁴³).

In a study from Kinshasa, couple counselling was shown to be effective in changing sexual behaviour in serodiscordant couples (Kamenga et al., 1991, see section 1a). Before VCT, less than 5% of couples had ever used a condom. One month after VCT, 70.7% of couples reported using condoms during all episodes of sexual intercourse. At 18 months of follow-up, 77.4% of the 140 couples still being followed reported continued use of condoms during all episodes of sexual intercourse. Intensive counselling followed testing and this led to a low rate of HIV seroconversion – 3.1% per 100 person-years of observation in Congolese married couples with discordant HIV status who attended VCT.

At AIC in Uganda, of 1 853 couples that attended together 77% said that they had never had sex but were intending to marry or start a sexual relationship; 92% were both seronegative; 0.8% were both seropositive and 7% were serodiscordant (Baryarama et al., 1998⁴⁴). Among the AIC clients the probability of a seropositive man having sex with a new partner who was seronegative was 0.81, and among seropositive women 0.84. Thus, there is a high probability that people who are seropositive will develop sexual relationships with seronegative partners and, unknowingly, transmit HIV if VCT is not available.

Industrialized countries

In a study from the United States, couple counselling was shown to be highly effective in preventing HIV transmission. No seroconversions were observed after

193 couple-years of follow-up among discordant couples following VCT (Padian et al., 1993 see section 1).

A study of 27 couples with a history of IDU from New York, however, showed that individuals who were aware of their HIV status for the 6 months prior to the interview did not differ significantly in their type of sexual activity or their condom use from those unaware of their serostatus (Carballo-Diequez et al., 1990⁴⁵). There may, however, be different perceptions and priorities among IDU couples that make changing sexual behaviour more difficult.

1.8 Premarital VCT

In many high-prevalence countries parents of young people and religious organizations are promoting pre-marital testing. In Nigeria, Catholic community organizations are promoting pre-marital VCT (Ubane et al., 2000⁴⁶). At AIC in Uganda, increasing numbers of people coming for VCT indicated that marriage plans was the reason they wish to be tested. In 1992, 6% of those attending VCT did so because of pre-marital testing and this figure rose to 35% in 1998 (Turyagyen Da, 2000⁴⁷).

Box 7: Barriers to changing sexual behaviour following VCT

Changing or modifying sexual behaviour is a complex process, with individual, emotional, societal, practical and economic aspects. The expectation that VCT, comprising one pre- and one post-test counselling session, will always result in safe sexual behaviour is often unrealistic. Difficulties may be compounded if people are tested alone and feel unable to share their test result with their partner/partners.

> Communication difficulties

It is often difficult for both men and women to discuss HIV testing in general and their own HIV status in particular because of cultural and social taboos surrounding discussion of sexual issues (Baggaley et al., 1997, Machezano et al., 2000⁴⁸, Dube et al., 2000⁴⁹). Without open discussion of HIV status it is difficult to make long-term changes in sexual behaviour to prevent HIV transmission. Interventions that provide young people with knowledge and communication skills will be important for these difficulties to be overcome.

> Gender imbalances in sexual decision-making and negotiation difficulties for women

Women are often unable to discuss safer sex with their husbands or sexual partners following VCT because of gender imbalances in sexual decision-making. This is a particular problem for sex workers. A study from South Africa noted that women need communication and negotiation skills so that they can discuss sexual and other issues with their partners (Karim et al., 1995)⁵⁰.

> Difficulties in changing sexual behaviour

Many studies have shown that women have less capacity than men do for making changes in their sexual behaviour:

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Industrialized countries

When seropositive women from San Francisco were questioned following antenatal VCT, although all said that they had informed their sexual partner of their positive HIV status, only 40% said that their partners used condoms. (Lester et al., 1995⁵¹). Reasons for not practising safe sex were refusal by partner, partner “not liking them” or partner “becoming too excited to wait to use condoms” and alcohol or drug use.

Developing countries

A study from Rwanda found that men control sexual decision-making (Straten et al., 1995⁵²) and seropositive women were more likely to report coercive sex with their partner. If a woman was able to discuss her HIV status, or her husband had previously been tested she was in a much better position to discuss or attempt negotiating for safer sex and condom use was higher. Participation of the male partner is crucial for successful HIV risk reduction in couples.

In Zimbabwe, women also reported that it was difficult to make changes in sexual behaviour due to their lack of power in sexual situations (Meursing et al., 1995). Even if women were able to share their seropositive status with their sexual partners they were often unable to insist on (or even discuss) condom use. Men stated that they did not like condoms and they were not thought to be appropriate within marriage.

In the multi-centre trial social barriers were identified that prevented women (both seropositive and seronegative) from being able to ask male partners to use condoms (Sangiwa, 2000⁵³). Women in Zambia described similar constraints (Chanda et al., 1994, Baggaley et al., 1998).

> Desire to have children

The need to have children may be seen as a greater priority than preventing HIV transmission. Thus seropositive women may risk HIV transmission to a seronegative partner or seronegative women may risk acquiring HIV transmission from a seropositive partner (Allen et al., 1992).

> Stigma

Uptake of VCT associated with MTCT interventions can be inhibited because women fear that they will be identified as seropositive (and hence subject to stigma or discrimination) if they take antiretrovirals or do not breastfeed their infants (Botswana mid-term evaluation 2000). This was given as a reason for declining VCT and MTCT interventions.

> Economic deprivation

In many high-prevalence countries poverty is the underlying cause of casual and commercial sex, with women and girls depending on money or gifts exchanged for sex (Chabala, 2000⁵⁴).

In many settings, while some couples receive VCT, they cannot always afford condoms, particularly if they are to be used for regular sexual partners. Many VCT centres do not provide free or subsidized condoms.

2. Prevention of HIV transmission in special populations following VCT

2.1 Men who have sex with men (MSM)

The group that has been most widely studied in relation to sexual behaviour following VCT is MSM. These studies have been carried out largely in industrialized countries (North America, Australia and Europe). Reviews of VCT interventions among MSM are available (Higgins et al., 1991⁵⁵, Wolitski et al., 1997⁵⁶, Weinhardt et al., 1999⁵⁷). Although risky sexual behaviour among MSM has declined, it was seen to be declining prior to VCT being available. Since VCT has been available, some of the studies show that men have reduced risky behaviour but this is independent of testing. In those studies where VCT is linked to increased behaviour change, sexual behaviour change is more marked in people who are seropositive. Long-term studies have shown that maintaining safer sex behaviour is difficult and many MSM are reported to resume risk behaviours with time (Kelly, 1998⁵⁸, Imrie, 1999⁵⁹).

Box 8: Studies among men who have sex with men

Summary: Background

- There has been a great change in the sexual behaviour of MSM since the late 1980s. Much of this behaviour change was probably a result of the very high morbidity and mortality associated with HIV in the gay community at the start of the epidemic in Europe and the United States. Many gay men watched friends die from HIV and it has been proposed that this direct experience led to behaviour change at an early stage. These changes were often noted before HIV testing became widely available.
- There is however, recent evidence that in some countries these changes in safer sexual behaviour among gay men are being eroded because of complacency, as life-prolonging ARV therapy is now widely available. Having an "undetectable viral load" is misconstrued as having a very low risk of HIV transmission and therefore not needing to practise safer sex.

Summary: Efficacy/sexual behaviour change

- Several studies show significant decreases in risk behaviour associated with VCT, with seropositive men showing greater reduction in risk behaviour than seronegative men or men who are unaware of their HIV status. This may suggest that learning about being seropositive had a greater impact on changing behaviour and that seronegative men are still putting themselves at risk from infection.
- Although there are several studies that indicate that VCT is important in promoting safer sexual behaviour, many studies have inconclusive findings and there is no consistent evidence to show that VCT is effective in promoting safer sexual behaviour among MSM.

Table 4 : VCT outcome studies reporting sexual behaviour from studies of men who have sex with men

Author (year)	Site	N	Results
Coates (1987)*	San Francisco, USA	502	All groups ↓ unprotected AI and # sex partners T/UN=NS.
Fox (1987)❖	Baltimore, USA	1001	T+ve ↓ unprotected AI cf. T-ve and UN. Most reduced risk behaviour prior to VCT
Cohn (1998) ❖	Denver, USA	269	T+ve ↑condom use cf T-ve. Most reduced risk behaviour prior to VCT.
McCusker (1988) ❖	Boston USA	270	T+ve less likely to have unprotected AI cf. UN or T-ve.
Schechter (1988)+	Vancouver, Canada	361	T+ve and T-ve ↓ # of sexual partners following VCT.
Frazer (1988) ❖	Australia	318	T+ve significantly more likely to use condoms for AI cf. T-ve or UN. T+ve ↓ unprotected AI cf. T-ve and UN.
Ross (1988) ❖	Australia	172	VCT groups ↑safer sex significantly cf. Counselling only, tested only and no intervention.
Valdiserri (1988) ❖	Pittsburgh, USA	955	T+ve ↓ unprotected AI cf. T-ve and UN.
Van Griensven (1989)*	Amsterdam, the Netherlands	307	T+ve significantly more likely to use condoms for AI cf. T-ve or UN.
Ostrow (1989) +	Chicago, USA	474	All groups ↓ sexual risk behaviour – N/S differences between T+ve, T-ve & UN.
McKusick (1990) ❖	San Francisco, USA	508	T+ve less likely to report unprotected AI than T-ve for both monogamous and non-monogamous men.
Doll (1990) +	San Francisco, USA	309	All groups ↓ sexual risk behaviour – N/S differences between T+ve, T-ve & UN.
Zapka (1991) +	Boston, USA	249	All groups ↓ sexual risk behaviour –N/S differences between T+ve, T-ve & UN.
Huggins (1991) +	Pittsburgh, USA	155	All groups ↓ sexual risk behaviour –N/S differences between T+ve, T-ve & UN.
Dawson (1991) +	4 UK cities	502	N/S differences between T=ve, T-ve and UT.
Roffman (1995) +	16 USA cities	1395	T more sexually active, but ↑condom use.

N/S = no significant differences

↓ = decreased

↑ = increased

T = tested and aware (of HIV status)

UN = unaware of HIV status

AI = anal intercourse

+ = N/s / inconclusive studies

❖ = declines in risky behaviour associated with VCT

* = comparisons between groups before and after testing available

2.2 Sex workers

In many countries directing care and support to sex workers (SWs) has been seen as an important approach in HIV prevention. An STI prevention programme in Kinshasa, the Democratic Republic of the Congo offering VCT, STI screening and treatment, group discussions about prevention and free condoms for HIV seronegative sex

workers succeeded in increasing condom use and reducing the incidence of HIV and other STIs (Laga et al., 1994⁶⁰).

In the Gambia, however, VCT for sex workers did not result in an increase in condom use (Pickering et al., 1993⁶¹). Nevertheless, there was very high use of condoms before the intervention (89% of women who subsequently tested seropositive reported using condoms before VCT) and this leaves very little room for improvement. Furthermore, the majority of HIV among sex workers in the Gambia is due to HIV-2 and there was a low level of morbidity and mortality resulting from HIV in the Gambia at the time of the study. Thus, the effects of HIV infection may be perceived as being less detrimental than in areas with high morbidity and mortality due to HIV-1.

A project from KwaZulu Natal in South Africa offered counselling and testing to sex workers at truck stops (Morar et al., 2000⁶²). Although uptake of testing was good, the majority of women did not want a positive result disclosed to them, as behaviour change was very difficult for economic and social reasons. Following VCT, women also continued with unsafe sexual practices. This project demonstrates the difficulties and social and economic barriers that must be overcome. It also highlights the limitations that may arise if sex workers alone (and not their clients) are targeted for interventions.

Two studies among sex workers from the United States report increased condom use and a decrease in risky sexual behaviour following VCT (Corby et al., 1990⁶³, Cohen et al., 1988⁶⁴).

Projects offering peer counselling for sex workers (without testing) have been shown to be well accepted and provide sex workers information about safer sex and HIV prevention advice (Cantillo, 1998⁶⁵).

Box 9: Studies among sex workers

Summary: Sex workers

There have only been a small number of studies among sex workers (SWs) in developing countries. Most of these studies have shown that VCT can be acceptable and some result in important changes in sexual behaviour to reduce transmission. However, in some settings economic and social pressures prevent SWs from practising safer sex. It may also be important to provide VCT and HIV education to clients if condom use is to be increased.

In industrialized countries, such as Australia, innovative approaches have been developed to reach sex workers, such as outreach buses and VCT associated with IDU services for SWs. In Russia and countries from the former Soviet Union, counselling services for sex workers are beginning to be developed.

Although VCT (as well as other interventions, such as condom provision and screening and treatment of STIs) have been shown to be important and cost effective interventions, there is still a great lack of provision of specially tailored services for sex workers (Plummer et al., 1994⁶⁶).

2.3 STI clinic attenders

In a study from the United States among STI attenders VCT was associated with a moderate decrease in STIs among people who tested positive, but the risk increased for people who tested negative. This suggests a need to improve post-test counselling in this setting, especially for people who test negative (Otten et al., 1993⁶⁷).

In another study from the United States STI attenders were randomized to either receive AIDS education alone or AIDS education plus VCT. At eight weeks follow-up the mean number of sexual partners decreased in both groups. However, compared with the AIDS education group, the VCT group questioned their most recent sexual partner more about HIV status, worried more about getting HIV and used condoms more often with their last sexual partner. VCT in this study was therefore shown to promote safer sex, at least in the short term (Wenger et al., 1991⁶⁸).

2.4 Injecting drug users (IDUs)

In many countries IDUs play an important role in HIV transmission. In the United States IDUs comprise 25% of the cumulative HIV cases. In New York alone there have been over 50 000 cases of HIV among IDUs. Furthermore, in the United States sex with an IDU accounts for 52% of AIDS cases that are attributed to heterosexual contact. Of the paediatric AIDS cases, 55% have been attributed to a mother who was exposed to HIV through her own injecting or that of her sexual partner (CDC HIV/AIDS surveillance, 1998). VCT can provide the opportunity for IDUs to know their HIV status and receive counselling about safe injecting practices and safer sex to prevent transmission to sexual partners. In Russia and the newly independent states of the former Soviet Union there has been a large rise in new cases of HIV infection – UNAIDS/WHO estimated that the number of infected people rose by a third in 1999 to 360 000. The majority of these were infected directly through IDUs or by having partners who were IDUs.

Box 10: Studies among injecting drug users

Summary: Background

- VCT services exist for many IDUs in Europe, Australia and the United States. Some IDUs are reluctant to attend them due to poor relationships with authorities and the police (with whom they may associate testing). Although services are being developed in the former Soviet Union and Russia their role in behaviour change has not as yet been fully assessed.
- In most of the studies assessing the impact of VCT of safe-injecting behaviour and sexual behaviour, IDUs have been recruited from drug programmes, some associated with methadone treatment and some with needle exchange.
- These studies often report significant changes in behaviour. However, it is difficult to determine whether change occurs due to the treatment programmes or due to VCT.

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Summary: Efficacy/injecting practices

In the majority of the studies there has been some reduction in risky injection practices (e.g. reduction in needle sharing) following VCT, although the effect of the associated treatment programmes may have a significant effect on this behaviour change.

Summary: Efficacy/sexual behaviour change

In most of the studies there was a significant change in sexual behaviour that could be directly attributed to the VCT component of the intervention/treatment programme. Changes such as increased condom use were, in general, more marked among IDUs who tested seropositive, than among IDUs who tested seronegative. Increased emphasis on providing safer sex counselling for IDUs who test seronegative is important since they may be at continuing risk of HIV infection.

In communities where VCT and needle-exchange programmes (NEPs) are available for IDUs there have been marked declines in the incidence among IDUs and the predicted rise in incidence has been pre-empted.

Table 5: VCT outcome studies reported injecting practices among injecting drug users

Author (year)	Site	n	Results (in changes in IP)
Casadonte (1990)	New York, USA	81	No change in IP following VCT.
+			
Magura (1990) ❖	New York, USA	48	↓ in risky IP following VCT.
Magura (1991) ❖	New York, USA	287	T-ve ↓ in risky IP following VCT cf. T+ve & UT.
Nicolosi (1991) ❖	Northern Italy	933	↓ in risky IP following VCT.
Calsyn (1992) +	Seattle, USA	313	↓ in risky IP but no difference between VCT or education group.
Desenclos (1993) ❖	12 European countries	1456	T-ve ↓ in risky IP following VCT cf. UT. T+ve less likely to give injecting equipment to others following VCT cf. UT.
Watters (1994) ❖	California, USA	5644	↓ in risky IP following VCT.
McCusker (1996) ❖	Worcester, Mass, USA	4267 (207)	↓ in risky IP following VCT.
Colon (1996) +	Puerto Rico	261	No change in IP following VCT.
MacGowan (1996) +	Connecticut & Massachusetts	674	N/S difference in drug treatment retention in T+ve, T-ve and UT.
Des Jarlais (2000) ❖	New York City, USA (meta analysis)	>11,000	↓ in risky IP following VCT, temporally associated with ↓ in seroincidence.
Sabin (2000) +	Multi-centre, USA	1174	No change in IP following VCT.

- N/S = no significant differences
- ↓ = decreased
- ↑ = increased
- T = tested and aware (of HIV status)
- UN = unaware of HIV status
- UT = untested
- IP = injecting practices
- +** = N/s / inconclusive studies
- ❖ = declines in risky behaviour associated with VCT

Table 6: VCT outcome studies reported sexual behaviour among injecting drug users

Author (year)	Site	n	Results (in changes in sexual behaviour)
Magura (1991) ❖	New York, USA	287	T+ve ↑condom use following VCT cf. UT & T-ve.
Nicolosi (1991) +	Northern Italy	933	No change in sexual behaviour following VCT.
Calsyn (1992) +	Seattle, USA	313	No change in sexual behaviour following VCT.
Desenclos (1993) ❖	12 European countries	1456	T-ve N/S difference in condom use following VCT cf. UT. T+ve ↑condom use following VCT cf. UT.
Friedman (1994) ❖	New York City, USA	317	T+ve N/S difference in condom use following VCT cf. UT +ve. T-ve ↑condom use following VCT cf. UT -ve. T+ve ↑condom use with non-IDU partner cf. T-ve.
McCusker (1996) +	Worcester, USA	4267	No change in sexual behaviour following VCT.
Colon (1996) ❖	Puerto Rico	374	↑condom use and ↓ # sexual partners following VCT.
Vanichseni (1992) ❖	Bangkok, Thailand	601	T+ve ↑condom use and FP use cf. T-ve and UT.
Vanichseni (1993) ❖	Bangkok, Thailand New York City, USA	1558	T+ve ↓ in risky sex following VCT cf. T-ve and UT.

2.5 Prison populations

HIV has been recognized as an important problem in prisons because unsafe needle-sharing practices and unprotected anal intercourse are common (Macdonald et al., 1999⁶⁹, Dolan et al., 1999⁷⁰). Mandatory testing of prisoners is required in some countries and VCT is available in others (Wainstein et al., 1998⁷¹). There are no studies that have examined whether VCT helps people in prison reduce HIV transmission or helps people to cope better or access services.

In many countries preventing HIV in prisons is a very neglected area. Issues of confidentiality, lack of choice related to coercive sex and lack of harm reduction and safe behaviour options need to be addressed. For the majority of people in custody there is no provision of condoms, clean needles (or access to bleach for cleaning needles), counselling and ongoing support for PLHAs or adequate discharge counselling.

2.6 Truck drivers

Long-distance truck drivers have been recognized to be a vulnerable group at high risk from HIV transmission in sub-Saharan Africa (Wilson et al., 1994⁷²). Studies have shown truck drivers to have higher HIV prevalence than the general population and in countries like Zimbabwe HIV prevalence is highest in trucking towns such as Masvingo and Rusape (MoH, Zimbabwe). HIV education and condom-promotion interventions have been implemented in several countries (Mwizarubi et al., 1994⁷³). VCT has been offered as a component of these interventions in Kenya. VCT offered to truck drivers in Kenya resulted in a decrease in sex worker contact, and a decrease in the incidence of STIs (from 34 per 100

person-years to 10 per 100 person-years ($p=0.001$). The percentage of men reporting extramarital sex decreased from 49% to 36% ($p<0.001$) and the decline in sex worker contact went from 12% to 6% ($p=0.001$) but there was no change in reported condom use (Jackson et al., 1997⁷⁴). This study provides encouraging evidence that VCT programmes developed for individuals at high-risk of exposure can be successful in changing sexual behaviour resulting in a decreased incidence of STIs.

In India it has been recognized that truckers are at particularly high risk of HIV infection and counselling services are being established (Bamne, 2000⁷⁵).

2.7 Blood donors

VCT services have not been widely available in many sub-Saharan countries until recently, and many people who wish to know their HIV status attend blood donation sites. In Zimbabwe this was reported as being a major problem (Mvere et al., 1996⁷⁶). In Zambia this tendency of people who wished to know their HIV status because they felt at risk from infection led to >38% of donation testing seropositive. This was not only expensive in terms of wasted units of blood, but also poses a transmission risk since "high risk" donors may be in the window period. When a pre-test education programme was introduced explaining the rationale for blood donation and suggesting alternative venues for VCT for those who felt at risk, the prevalence rate fell to 8.6% with a subsequent cost saving (Chama et al., 1993⁷⁷).

The aim of VCT associated with blood donation is primarily to prevent those who are at high risk of HIV infection from donating blood. VCT services associated with blood banks may not be the appropriate sites for counselling individuals about coping with HIV infection and their own sexual behaviour. Referral to other VCT sites would often be more useful. However, in the United States VCT associated with blood donation may include person risk-reduction counselling. A study from New York among seropositive blood donors demonstrated a significant reduction in unsafe sex following testing (compared to their behaviour before testing), although 40% still reported unsafe sexual behaviour at follow-up interviews (Cleary et al., 1991⁷⁸).

2.8 Young people

Box 11: Young people

Background

Young people aged 10 to 24 account for over 50% of all HIV infection occurring worldwide (excluding perinatal cases) (WHO/UNAIDS, 2000).

Preventing HIV among young people is particularly urgent in sub-Saharan Africa where, in many countries, youth comprise over 30% of the population and general HIV prevalence rates exceed 10%.

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Several cultural, biological and environmental factors place young people, especially adolescents aged 10 to 19, at increased risk. For example, whether voluntarily or not, young people often begin their sexual lives at early ages. In Uganda, 30% of women have had sexual intercourse by the age of 15 and 72% by the age of 18 (DHS, 1995). In Kenya, the United Republic of Tanzania and Zambia, the average age of sexual initiation is reported to be 16 for females and 17 for males.

Despite relatively high levels of knowledge among young people about HIV/STIs, many engage in risky behaviours, with fewer than 10% of the sexually active adolescent females from countries in sub-Saharan Africa reporting condom use (Zambia, DHS, 1996, the United Republic of Tanzania, DHS, 1996 & Kenya, DHS, 1998).

The immature genital tract of female adolescents makes them biologically more susceptible to the HIV virus, a risk compounded by a variety of social and environmental factors such as young girls engaging in sex with older men (Brookman, 1990⁷⁹, Weiss⁸⁰ et al., 1996).

HIV prevalence rates among youth reflect the realities of these risks. Among pregnant adolescents 15 to 19 in sub-Saharan Africa HIV infection rates range from 4% in Nairobi, Kenya to 32% in Kampala, Uganda, with even higher percentages reported among pregnant women ages 20 to 24. Altogether, HIV rates are high among youth, HIV-infected females are disproportionately affected, with a ratio to infected males in excess of 4:1 in some populations (Munodawafa et al., 1996⁸¹).

- **VCT for young people**

While recent study results from sub-Saharan Africa reveal that high-quality VCT is an effective strategy for reducing HIV sexual risk behaviours among adults, little is known about VCT for youth, especially among adolescents ages 14 to 19. Currently, though, experiences in several sub-Saharan countries reveal that youth actively seek and receive voluntary HIV counselling and testing, though many have expressed concerns about confidentiality, cost, access and lack of trust in their sexual partners.

- **Impact of VCT for young people**

There is very little information on the outcomes following VCT for young people and whether they are able to change and sustain changes in sexual behaviour following VCT. Furthermore, little is known about the experiences of seropositive young people and what impact a positive result has on their lives, who supports them and what their needs are.

There is very little information on VCT services and young people. In many high-prevalence areas, young people, especially young women, are at high risk from HIV infection yet they often have no access to VCT services. There have been many studies that acknowledge the special vulnerabilities of young people – and young women in particular – to HIV, but this has not been translated into increasing access to VCT services for them. Furthermore, issues such as age of consent for VCT for young people, parental involvement in decisions to test, confidentiality and coercion to testing vary and need careful consideration in many settings.

Demand for VCT

In many developing countries VCT has not been available to young people. However, when young people are asked about whether they would like to be tested they often say they would like VCT to be more widely available and would like to be tested. In

the pilot phase of a study of young couples in rural Western Kenya, 95% of participants said that they would accept a free HIV test. If they had to pay for the service (a \$4 fee), potential demand remained relatively high with 31-40% saying they would pay for the test. The mean age of couples participating in this study is 22 (Damesyn et al., 1998⁸²).

In a study exploring knowledge and attitudes to HIV among university students in the United Kingdom and Zambia, 7% of United Kingdom students (n=217) and 10% of Zambian students (n=1240) had had an HIV test. A further 35% of Zambian and 15% of United Kingdom students said that they would like to be tested (Baggaley et al., 1997⁸³). In a KAPB study from Rakai Province in Uganda 84% of 865 young people questioned (18 to 25) said that they would like to see an HIV/AIDS counsellor in the future (Kelly et al., 1993⁸⁴).

A participatory study from Uganda with adolescents (12 to 19) in Mpigi District, Uganda, showed that the most frequently discussed topic initiated in peer group discussions was HIV transmission, followed by issues of sexuality and the initiation of sexual relationships (Bohmer et al., 1997⁸⁵). Males (17 to 19) and females (14 to 16) showed the greatest interest in HIV testing. However, many young people expressed concerns about issues of confidentiality, cost and location of services, as well as a lack of trust in their sexual partners to remain faithful after having the test.

Very similar findings were encountered in a series of focus group discussions and in-depth interviews carried out among young people from three provinces in Zambia (Baggaley et al., 1998⁸⁶). There were 465 young people (m=217, f=248) ages 12 to 21 (mean age 17) who took part in the study. Young people proposed several theoretical reasons for HIV testing. 57% of boys and 53% of girls said that they would like to have the opportunity of going for an HIV test. However, the majority of them were not keen to have an HIV test at the present time, as they were worried that they would be positive (despite HIV prevalences being relatively low in this age group). Some young people said that they would consider having an HIV test in the future. The small number who had been tested thought it was better to know, even if the result was positive. There was a wide interest in pre-marital testing, which is promoted by several churches. Respondents saw this as an opportunity for a 'clean slate', although some said they would still be too scared of the results to have a test, or felt there was nothing that could be done for them if they were found to be positive. Some said that they would like pre-marital testing in order to prove their partner had been as careful as they had been, while others wanted to check before exposing their marriage partner to risks they had taken themselves.

These studies reflect an abstract demand for VCT, which may not be immediately translated into actual demand, if VCT were made available, and emphasizes the need for active promotion of the service and availability of support services for those who test seropositive.

Uptake of VCT

Young people do actively seek and receive VCT in several sub-Saharan countries such as Uganda and Kenya, even though the VCT services available have not been designed specifically for young people (Nabwiso et al., 1993⁸⁷). The AIDS Information Centre (AIC) in Uganda has reported an increase in the numbers of youth seeking VCT, especially for pre-marital testing (Kakooza, 1992⁸⁸, Gumisiriza et al., 1996⁸⁹). About 15% of AIC clients are between the ages of 15 to 19. By the end of 1995, 39 000 adolescents had visited the centre. Of these adolescents, 78% were females and 40% came to the centre with their sexual partners.

In Brazil uptake of VCT by young people (13 to 19 years) is reported to be increasing (Gomes et al., 2000⁹⁰).

In the United States 25% of new HIV infections are in young people (13 to 21 years). To promote VCT in at-risk young people in New York a social-marketing VCT programme aimed at young people has been developed (Flutterman et al., 2000⁹¹).

Impact of VCT

Very little is known about the impact of HIV testing on young people – whether it helps them make changes in the sexual behaviour; how young people who test seropositive cope; who they share their test result with; who provides emotional support and if they are able to access support services following VCT. A small descriptive study from Nigeria stated that the VCT service for young people increased uptake of condoms and decreased STIs but no detailed information was given (Ita, 1998⁹²).

A study from the United States showed that VCT promoted a reduction in sexual partners among the majority of males but none of the females reported increasing safe sex practices (Flutterman et al., 1990⁹³).

Another study from the United States showed that sexually active young people under 18 were less likely to attend VCT than their adult counterparts aged 18 to 44, although half of new HIV infection in the United States is in men and women under 25 (CDC, 1998⁹⁴). In order to learn about young people's attitudes and experiences to HIV testing, 73 "high-risk" (sexually active and economically or socially marginalized youth, living in urban areas with relatively high rates of HIV infection) were interviewed in depth (Kaiser family foundation, 1999⁹⁵). Availability and acceptability of VCT services were found to be a major barrier to attending VCT for these young people. Worries about confidentiality and fear that results would be shared with parent/s without their consent also prevented young people from accessing VCT.

3. Care: Improving access to medical, emotional and social support

VCT enables people with HIV to seek emotional, social and medical care, and in areas of limited resources allows services to be channelled appropriately. It also enables people who test seronegative to access suitable support and services.

Box 12: Care needs following VCT

There are many supportive benefits of knowing one's HIV status, if seropositive. Studies have shown that there are several main concerns following testing:

The main concerns for those who test seropositive are:

- Social support (including material and financial support)
- Access to and provision of condoms
- Medical care (earlier access to appropriate medical care and preventive therapies)
- Emotional support and adjustment/coping (ongoing emotional support from counselling services, spiritual services, traditional medical services, partners, families and community)
- Sharing HIV status (with partner, family or close friend)
- Peer support (from peer-support groups, post-test clubs and advocacy)
- Future planning (making plans for their future and that of their dependants, including making a will)
- Access to interventions to prevent MTCT (including infant-feeding counselling, ARV interventions and special antenatal care)
- Family-planning services (including termination of pregnancy services where legal and safely available)

The main concerns for those who test seronegative are:

- Safer sex and staying negative
- Future fertility
- Sharing result with partner
- Continuing risk of exposure (occupational, positive or untested sexual partner)
- Caring for relatives
- "Worried well" (This refers to people who are at very low risk of HIV infection but worry overly about being infected. This phenomenon is more common in low-prevalent countries where there has been a prominent HIV education campaign.)

3.1 Access to medical care

ARVs

In industrialized countries the development of highly active antiretroviral therapy (HAART) has had a dramatic effect on the long-term survival of people with HIV. This has meant that there is great benefit for people with HIV to be aware of their seropositive status so that they can start treatment earlier, thus avoiding HIV-associated illnesses and prolonging their life. In Europe and the United States the death rate from HIV has fallen significantly over the past five years as a result of the availability of HAART (Carpenter et al., 2000⁹⁶). Ongoing counselling has been shown to be an important factor in ensuring adherence (Revsin et al., 1998⁹⁷, Greene et al., 2000⁹⁸).

Preventive therapies

Less costly interventions to reduce the incidence of HIV-associated infections, such as tuberculosis preventive therapy (TBPT), have been shown to reduce the incidence of TB among people with HIV (Mwinga et al., 1998⁹⁹), (WHO/UNAIDS¹⁰⁰).

Two studies from sub-Saharan Africa (Godfrey-Faussett et al., 1995¹⁰¹, Aisu et al., 1995¹⁰²) have shown that VCT can be an appropriate site for screening and treating people who test seropositive for active TB, and providing TBPT to those without active TB. In Haiti, a community-based programme offering VCT and screening for TB was effective in identifying early TB and instigating prompt and effective treatment (Desormeaux et al., 1996¹⁰³). In Zambia, a pilot project of integrated HIV and TB counselling for families is being developed. Early results demonstrate that this is to be acceptable but longer-term follow-up is awaited (Ayles et al., 2000¹⁰⁴). In Malawi, the Malawi AIDS counselling and resource organization (MACRO) provides VCT at two sites. It also provides TB and STI screening and treatment and family planning. There is considerable demand for these services by people following VCT, even among people who attend VCT for primarily non-medical reasons (Phiri et al., 2000¹⁰⁵).

Other preventive therapies such as cotrimoxazole prophylaxis (Anglaret et al., 1999¹⁰⁶, Wiktor et al., 1999¹⁰⁷, Sassan-Morokro et al., 1998¹⁰⁸) have also been shown to prevent morbidity in PLHA in some settings (seropositive TB patients in Côte d'Ivoire and Senegal). Cotrimoxazole is cheap, easy to administer and requires minimal monitoring. UNAIDS has recommended that it should be made more widely available to PLHA.

Family planning services

Referral for other services, such as contraception, can help couples (both seropositive and seronegative) make informed decisions about family planning methods and having children (Pugh et al., 1998¹⁰⁹). In many high-prevalence countries the desire to have children is strong and there have been no significant differences in the uptake of family planning services for seropositive and seronegative women. In Rakai, Uganda, 13% of positive women and 12% of negative women used female-controlled family planning following VCT (Lutalo et al., 2000¹¹⁰).

Ongoing medical care

One of the most valued services offered to people following VCT at Kara, Zambia, was the provision of basic, ongoing medical care for the treatment of HIV-associated infections (Baggaley et al., 1998). Similar findings were evident from The AIDS Support Organization (TASO), Uganda, evaluation.

Complementary medical services

In many countries where ARVs are not available because of cost and lack of laboratory infrastructure PLHA may have symptomatic benefit from complementary/traditional medicines (Gousov, 2000¹¹¹). However, sometimes counselors may have a role in challenging unrealistic beliefs about complementary therapies or assisting clients in discussing the pros and cons regarding decisions about allocating limited family resources to these therapies.

3.2 Access to ongoing emotional/psychological care

Knowledge of HIV status can enable people to seek appropriate emotional support. Those who are seronegative will usually feel relief, but may have ongoing emotional difficulties, which need addressing. They may have a partner who is pos-

itive or who is untested and may therefore feel at continuing risk of HIV infection. Others may feel guilt at being negative, especially if a partner is infected or has died from HIV.

Developing countries

People who test seropositive may experience a range of emotions from denial and anger to despair and suicidal ideation. These emotional responses are normal, but counselling can help people cope with their emotional reactions and prevent serious or long-term, intractable problems.

Emotional problems were found to be common in a study of 307 people who had attended VCT from six centres in Nairobi (Vollmer and Valadez, 1999¹¹²). Accessing emotional support has been shown to help people cope more easily with the psychological sequelae of testing seropositive.

The majority of people attending VCT, whether they test positive or negative, will attend one or at the most, two post-test counselling sessions. In Zambia, although further counselling sessions or referrals to specialized counselling services were offered, many people said that they did not want to have further counselling, at least not in the immediate future. Only 10% of seropositive people and 6% of seronegative people had more than two post-test counselling sessions (Baggaley et al., 1998). Some people attended for further counselling in the one to five years following VCT. This often coincided with a crisis or change in personal circumstances. When interviewed 6 to 18 months following VCT, many people said that they had found other informal services or resources in the community to help them with their emotional needs. Church groups, family members, friends and traditional medical workers were cited as providing emotional support.

In the multi-centre trial 86% of people had only one pre-test and one post-test counselling session, although ongoing counselling was offered (Sangiwa, 2000). Those who tested seropositive were more likely to attend further counselling sessions.

Industrialized countries

In lower prevalence countries, such as Romania, longer-term support may be needed for PLHA to help them cope, especially when the majority of people with HIV are from risk groups that are already marginalized (Buzducea et al., 2000¹¹³).

Three studies among MSM (Hays et al., 1990¹¹⁴, Catania et al., 1992¹¹⁵, Peterson et al., 1995¹¹⁶) have shown that seropositive men are more likely to seek emotional support following VCT than seronegative or untested men. However, people who were symptomatic were the most likely to seek help and the authors conclude that this may be a more important factor than knowledge of HIV status. However, VCT may enable MSM to receive services most fitting to their needs.

A study of IDUs showed no difference in uptake of services between those who were seropositive and symptomatic, seropositive and asymptomatic and seronegative (Solomon et al., 1991¹¹⁷). This should not be viewed as an ineffective outcome as both positive and negative IDUs may be in need of emotional and medical support. VCT may mean that IDUs are able to seek health and psychological care services appropriate to their needs.

Spiritual support

Ongoing emotional support can also be provided outside formal counselling services. Spiritual support for people with HIV has been shown to be important in both developing and industrialized settings (Kaldjian et al., 1998¹¹⁸). In Thailand, Buddhist monks provide ongoing support for people with HIV and teach meditation to facilitate coping and relieve stress (Sittitrai et al., 1994¹¹⁹).

3.3 Psychological coping and adjustment (for the individual as well as for the family and community)

One of the main advantages of counselling associated with VCT is allowing people to accept and cope better with their HIV status. "Coping" with HIV was defined by the TASO staff and clients to be *"an acceptance of being HIV-positive and having a positive attitude towards making the most of each day."*

Box 13: Summary VCT and coping

Several studies have described enhanced coping following VCT:

- Acceptance of being HIV positive
- Alleviating anxiety and depressive reactions (Camara, 1991¹²⁰; Magura et al., 1990¹²¹)
- Improving coping (Carvalho-Neto, 1991¹²²; Mukisa, 1990¹²³; TASO, 1995; Baggaley, 1998, Lie and Biswalo, 1996)
- Involving family and friends in HIV care and support (Carvalho-Neto, 1991, TASO 1995)
- Bringing hope and relief (Zulu, 1990¹²⁴)

Coping mechanisms, following a seropositive test, reported in these studies include:

- Sharing status with someone
- Sharing status with spouse or sexual partner
- Challenging beliefs about the meaning of an HIV diagnosis to facilitate adjustment
- Continuing to work or self care
- Enjoying social contacts and/or leisure activities

In a study from an outpatient HIV counselling clinic in Zimbabwe, it was shown that by providing "enhanced counselling and support services" 75% of PLHAs who were previously fearful of undergoing VCT (because of perceptions of stigma and rejection) wished to be tested (Meursing et al., 1995^{125,126}; 1997¹²⁷ & 1999¹²⁸). The counsellors were able to assist people who tested positive to cope better by:

- Assisting in gaining of social support and acceptance from family, partners and employers by diffusing irrational fears, blame and anger.
- Facilitating discussions in marital and family relationships about 'shameful' sexual subjects.
- Broaching difficult issues like planning for the future.
- Facilitating management of medical, practical and economic problems.
- Encouraging disclosure within a supportive framework. With enhanced coun-

selling 80% of people were able to disclose their seropositive status to someone and 75% were able to disclose it to their partner/spouse. In contrast, more than half who refused counselling did not tell anyone else of their status, including those who were planning to marry or who were married. Importantly, none disclosing to family experienced total rejection.

Studies from the United Republic of Tanzania and Uganda have also shown that counselling can enable people to gain social and emotional support and cope better (Lie and Biswalo, 1996¹²⁹; Woudenberg, 1994; TASO, 1994¹³⁰).

A study of HIV seropositive MSM showed that a specially designed behavioural stress management intervention had a remarkable effect on decreasing anxiety and anger and alleviating stress (Antoni et al., 2000¹³¹). Seventy-three men were randomized to an intervention group or a waiting-list control group. Not only did the intervention group show significant psychological improvement over base line compared with the control group, but they had significantly less norepinephrine output and a higher CD3+CD8+ cell count at follow-up.

In Hong Kong, a study of 35 symptomatic PLHA showed that group counselling/therapy and peer support enhanced mood, decreasing tension, anger and depression (Molassiotis et al., 2000¹³²). Quality-of-life measures also improved with these interventions when compared with PLHA in a control group.

(For further discussion of coping with emotional reactions following VCT see Section 6 on "Negative outcomes following VCT").

3.4 Sharing of HIV test result with family and friends

Sharing HIV status is not only important in enabling people to receive emotional support from family and friends and help in future decision-making, it also reflects people's ability to understand and accept their HIV status. Rates of disclosure to partners and family/friends vary considerably, but in many studies (particularly from developing countries) people have found it easier to discuss their HIV status with a close friend or family member than with their partner.

Benefits from disclosure

Disclosure of one's HIV status increases both practical and emotional support for those who test seropositive (Holt et al., 1998¹³³).

Developing countries

People who tested seropositive from general VCT services in the United Republic of Tanzania shared their HIV test results with a "significant other" of the same sex. Those who were married or cohabiting did not choose their partner. The significant other was usually chosen among close family members, usually from the same generation as the patient (Lie and Biswalo, 1996¹³⁴).

Similar findings were apparent from the Ugandan TASO/WHO evaluation (TASO/WHO, 1993-1994¹³⁵). After counselling the majority of people (90.4%) were able to reveal their HIV serostatus to close relatives. In that same evaluation, 85.3% reported revealing their HIV status to relatives other than household members and 67% revealed their status to household members. Only 36% revealed their status to spouses or regular sexual partners. This suggests that emotional support is sought over a broader family and community network.

When the VCT service was first set up in Zambia, people found it difficult to share results, especially immediately following testing (Kelly et al., 1994). A later evaluation from the same site showed that most people were able to share their HIV status with someone (Baggaley et al., 1998). However, women in particular said it was shameful to have HIV and, if they were known to be seropositive, they worried they would be discriminated against, and were particularly reluctant to tell their partner.

In a study from Uganda, 22 families with 1 or more adult members with HIV were interviewed about their responses to HIV and stigma (McGrath et al., 1993¹³⁶). Approximately half of the PLHA interviewed said that they had not informed any of their family. They said that they feared their family would worry or would not understand. Some said that they feared rejection if their families knew of their positive status. Family members who were informed said that they were shocked or feared the loss of their relative with HIV. However, none rejected him/her or feared infection because of day-to-day contact.

Industrialized countries

A small study from the United States showed that when women from San Francisco were questioned following antenatal VCT many had not disclosed their HIV status to any friends (65%) or family members (25%). Many worried about being abandoned or rejected by loved ones if their seropositive status were known. They cited lack of public understanding about HIV infection as being an important factor, and taboos about HIV infection, especially in relation to women (Lester et al., 1995¹³⁷). Despite not sharing their HIV status with family and friends, seropositive women said that they did receive good emotional support from them.

A study from London also revealed that people were more likely to share their test result when they had symptomatic HIV disease or needed treatment and that disclosure enabled people to obtain additional support (Miller et al., 1998¹³⁸).

(For further discussion of disclosure see Section 6 on "Negative outcomes following VCT").

Family counselling

Where families can be involved in counselling this can be of great benefit in helping the person with HIV be more accepted and supported by his/her family (Lippmann et al., 1993¹³⁹). A project from the Ukraine has demonstrated that by involving the families of people with HIV they were better able to accept and understand the problems of their HIV family member and to help that member cope following counselling (Pidlisna et al., 1998¹⁴⁰).

In Chaing Mai, Thailand it has been proposed that post-test counselling should be carried out in a family setting to facilitate disclosure and hence long-term support and normalization. Preliminary investigation has shown that this may be a feasible option (Srirak et al., 2000¹⁴¹).

3.5 Post-test clubs/support groups

Peer support groups and post-test clubs have often been developed in association with VCT, to help people cope following VCT by sharing experiences and providing mutual support. In some countries they have also allowed PLHA to form pressure groups to improve services and challenge political and legal decisions. In Zambia, men were more likely to attend support groups than women (26% seropositive men versus 3% seropositive women). Some people who had been through VCT and tested negative also attended support groups – again men were more likely to attend than women (15% men and 8% women attended) (Baggaley et al., 1998¹⁴²). Those who attended groups often did so in their own communities rather than in the support group associated with the VCT centre. Another study from Zambia has described the benefits of post-test clubs (PTC). Of the 810 people tested, 150 have joined PTCs. These provide peer support as well as outreach HIV education to the community (Katongo, 2000¹⁴³).

3.6 Access to social support

An advantage of people knowing their HIV status is that it allows seropositive people and their families to benefit from social support services at an earlier stage. This may help them to cope with their HIV infection and to have a better quality of life.

In many industrialized countries there is a wide range of social support services available for PLHA. In the United Kingdom people with HIV have statutory rights to certain services and there are a large number of nongovernmental organizations (NGOs) that provide material and support services for people with HIV along with their families and dependants. It can therefore be a considerable advantage to be aware of one's status in order to be able to have access to these services at an early stage. Terrence Higgins Trust¹⁴⁴, a United Kingdom NGO, provides a broad scope of material and support services for people with HIV.

In middle-income countries with lower levels of HIV this is a more feasible option. For example, people with HIV in Russia have statutory rights to housing and other services (Russia Federal law, 1999¹⁴⁵).

In high-prevalence developing countries, although the needs for social support services are often much greater, resources are frequently inadequate. Some developing countries have policies such as offering free or subsidized services to people with HIV, but because of the overwhelming demand they may be difficult to implement. However, where VCT services have a close link to social support, these have

been shown to be popular in many settings. In Uganda, TASO has been providing comprehensive support for HIV-infected and affected people since 1987. The participatory evaluation of the service demonstrated that there were many material needs of PLHA following testing. There are also numerous examples of NGOs and religious/church groups offering support services for people with HIV. Problems of coverage and sustainability are common.

In the Central African Republic, out of 2 800 clients attending a VCT centre approximately 350 were seropositive. Of these, 80% were referred for social support (Sehonou et al., 1999¹⁴⁶). (Antenatal testing from sentinel survey sites in the country's capital Bangui revealed a seroprevalence of 12-30%).

Material support to PLHAs and their families

Many of the countries that are most affected by HIV are also experiencing severe economic hardship, and needs assessments often reveal that the most pressing requirement for PLHAs is material support. In Rwanda, seropositive women stated their most urgent needs as being food, housing and money (Keogh et al., 1994¹⁴⁷). Linking material assistance to VCT services is controversial. Although it is popular among VCT service attendees and encourages the use of VCT services, it is often unsustainable and may lead to dependence and unmet expectations when supplies run out or donor support is limited (Williams and Kalinaki, 1999¹⁴⁸).

At TASO a third of clients and family care-givers considered financial assistance their main need. Although basic foodstuffs (e.g. rice, oil) are sometimes available, supplies have proved to be irregular and dependent on donations.

When the VCT service was set up in Lusaka, Zambia, seropositive clients were eligible for maize meal donated by the World Food Programme (WFP). This was a very popular service. The counsellors felt that they had something to offer people who tested seropositive. Widows with HIV, in particular, were often poor and supplies were welcome to help feed their children. However, this service was stopped when the WFP changed its policy, creating despondency among clients and counsellors. In the Kara study, the majority of people interviewed had not discussed "Public Welfare" issues with their counsellor. This is understandable because, practically, there is very little available. The total social welfare budget for Zambia for 1997 was US\$ 634 000 (total population approximately 9 million). The fund is targeted at unsupported women, the sick, elderly people and people with disabilities. In 1996, less than 150 000 people had any contact with the social welfare services. Obtaining social welfare is cumbersome and involves assessment by the District Social Welfare Officer. This inevitably means travelling to the office and long waits for often no gains, as the criteria for qualifying for assistance are often vague and arbitrary.

Another study from Zambia also found that material needs (e.g. provision of basic food items and financial assistance for school children) were a high priority for people who tested seropositive, but there were few resources available to meet these needs (Hamavhwa et al., 1998¹⁴⁹).

Skills training and small loans

Some people with HIV experience problems with employment because of:

- Irregular attendance as a result of intermittent ill health.

- Employment-related HIV testing. Some companies require employees to undergo HIV testing before they can take up a position or continue in employment.
- Discrimination or abuse by colleagues or employers.
- Women who lose their husbands as a result of HIV may also relinquish their home and financial security.

With a view to addressing these problems some VCT centres refer people who test seropositive to skills training workshops. Skills training for seropositive people following VCT has been running in Zambia since 1992. It is popular and provides a supportive environment for people coping with their HIV infection (Baggaley et al., 1995¹⁵⁰). All the current trainers were originally trainees who joined the project following VCT, and some of the trainees have gone on to set up viable small businesses.

TASO skills training has also been an integral part of services available for people following VCT. Although only 8.6% of those attending TASO attended the day centre, 95.2% said that they benefited from sharing experiences as well as from the emotional support of other PLHAs and 84.1% said that they benefited from the skills training. The majority of day-centre attendees were women (81%) and many were widows. In the TASO evaluation 60% of those interviewed mentioned the need for capital to start income-generating projects. When loans were made available, however, only 12% repaid them.

In Kenya, women attending VCT associated with a MTCT project were able to take part in income-generation projects and received help and information to improve the nutritional status of their children (Lukandwa et al., 1998¹⁵¹).

Support for children of PLHAs

The TASO evaluation also identified school fee payment for needy children of PLHAs as a priority. Initially, TASO provided school fees for 35% of children assessed as needing assistance. However it was realized that this was only a short-term option as ongoing funding for this activity was not available. Other studies have demonstrated the importance of providing counselling for children of PLHA and orphans to help them cope better and prepare for the death of their parent/s (Krabbendam et al., 1998¹⁵², Nanono Namatovu et al., 2000¹⁵³).

3.7 Legal and future planning

Making wills

If people with HIV are aware of their status they can make plans for their future and that of their dependants. This may include making will and making decisions about the care of their dependants after they die. Property grabbing occurs in some countries in sub-Saharan Africa. It is the practice of relatives of the deceased seizing his or her property at death. This often results in women and orphans being left destitute following a death. Making a legally binding will may ensure that loved ones and dependants are provided for. In the TASO evaluation, making wills was discussed in 39% of observed counselling sessions, with 51.3% of the people expressing willingness to make wills. However, only 16.8% had made them and 22.3% said there was no point in making a will as they had nothing to pass on. In Zambia, in a review of 55 PLHAs, only 7 had written legal documents relating to their property (Ndawa et al., 1990¹⁵⁴).

Planning for dependants

In Zambia, 37% of seropositive men and 35% of seropositive women worried about the future of their dependants following their death. In the same study, 20% of the men and 42% of the women said that they had been able to make plans for their dependants' future following VCT.

Other reports have shown that as a result of counselling, HIV seropositive individuals have been able to make plans for their survivors (Ndawa, 1990¹⁵⁵; Kaleeba et al., 1997¹⁵⁶, TASO 1994¹⁵⁷).

Financial planning

In Zambia, 31% of the men and 13% of the women said they had made changes in their work life following VCT, in order to have better financial options for the future. These changes included getting a second job, working overtime and saving.

3.8 Access to interventions to prevent mother-to-child transmission of HIV, specialist antenatal care and family planning services

In developing countries cheap and feasible methods to significantly reduce mother-to-child transmission (MTCT) of HIV (CDC, 1998¹⁵⁸, Guay et al., 1999¹⁵⁹), and advice on modifying infant feeding practices for seropositive women (Coutsoudis et al., 1999¹⁶⁰, Van de Perre, 1999¹⁶¹) are now available. These can reduce HIV transmission from mother-to-child to 10% or less. For women and their children to benefit from these MTCT interventions it is important for women to be offered VCT during the antenatal period. Counselling may also need to be ongoing after the initial post-test counselling session for seropositive mothers who take part in MTCT interventions, including modifying infant feeding practices (Chopra et al., 2000¹⁶², Kibuuka et al., 2000¹⁶³). VCT associated with MTCT interventions should not be limited to ensuring uptake of and adherence to MTCT interventions. It is a much more effective intervention if counselling about HIV transmission to and from sexual partners is discussed and if men can be involved and agree to VCT as well. In a small study from Uganda, women attending VCT associated with MTCT seronegative mothers chose abstinence or condom use until their partners accepted VCT (Matovu et al., 2000¹⁶⁴). The length of follow-up is currently short and it would be useful to know how long safer sex behaviour was maintained and what proportion of male partners accepted testing.

3.9 Access to HIV transmission prevention services

Many people in high-prevalence countries or from among groups who are at higher risk from HIV infection assume that they are already infected. This may prevent them protecting themselves from HIV infection. In Zambia, although the HIV prevalence rate among young men is low (<5% in men under 19 years of age), many said that there was no point in adopting safer sex as it was likely that they were already infected (Baggaley, 1998¹⁶⁵). Knowledge of HIV status can therefore give people the

ability to protect themselves from HIV infection and encourage access to HIV preventive services. A study from San Francisco demonstrated that people who tested seronegative but were at high risk of HIV infection were more likely to access HIV prevention services (Marx et al., 1998¹⁶⁶).

4. Societal

Role of VCT in promoting normalization of HIV, challenging stigma and increasing acceptance of people with HIV

Overcoming the stigma associated with HIV is the biggest challenge to its prevention and care. It has been proposed that wider access to VCT and a larger number of people's greater awareness of their HIV status within a community are important elements in challenging stigma (Lambouray, 1998¹⁶⁷). Countries where VCT is well established, such as Uganda, have a less stigmatizing attitude to HIV. However, for it to be effective in challenging stigma, HIV testing has to be a voluntary process associated with counselling that helps people understand and accept their status (UNAIDS, 1999¹⁶⁸, UNAIDS, 2000¹⁶⁹). For example, there are countries such as Russia, where HIV remains highly stigmatized, despite the fact that all women have routine testing as part of their antenatal care and a large proportion of the population has been tested routinely for HIV.

It has also been suggested that if VCT were offered routinely, and more people would accept VCT as an important component of medical care, it would promote "normalization" of HIV (De Cock et al., 1998¹⁷⁰, Godfrey-Faussett et al., 1998¹⁷¹). De Cock states that the excessive caution around HIV testing has had the detrimental effect of preventing people with HIV from accessing care. It also has contributed to the stigma and secrecy associated with testing.

A study from Zambia contrasts the individual confidential approach to counselling with a more open, family-oriented one. It proposes that the latter creates more open and proactive responses at the community level (Goma et al., 1999¹⁷²). There are, however, no studies that look specifically at the role of VCT in promoting openness in communities and this is an important area in which to prioritize future research.

5. Cost

5.1 *Developing countries*

Cost-effectiveness analysis leaves out many of the hidden benefits of VCT, particularly, in the areas of care and quality of life, which may be cost-saving. Results from the multi-centre trial have shown that VCT can be a highly cost-effective intervention (Sweat et al., 1999¹⁷³, 2000¹⁷⁴). Using a hypothetical cohort of 10 000 seeking VCT, they estimated that the intervention averted 1 104 HIV infections in Kenya and 985 in the United Republic of Tanzania. The cost per client for VCT was estimated to be US\$ 29 in the United Republic of Tanzania, and US\$ 27 in Kenya. In both these sites total costs were composed of 74% for labour and infrastructure, 2% for start-up, and 24% for commodity expenses. The single largest cost was for counsellor salaries and benefits (36%). The cost per HIV infection averted averaged US\$ 346 in the United Republic of Tanzania and US\$ 249 in Kenya. The cost per disability-adjusted life-year (DALY) saved was US\$ 17.78 and US\$ 12.7. VCT was found to be more cost-effective when targeted at seropositive people, couples and women. The most cost-effective intervention was VCT aimed at couples. If they increased the proportion of couples attending VCT to 70% this would reduce the cost per DALY to US\$ 13.39 in the United Republic of Tanzania and US\$ 10.71 in Kenya. VCT compares favourably to other interventions in cost per HIV infection averted in East Africa (e.g. US\$ 251 per case of HIV averted for enhanced STI services in Mwanza. This intervention was estimated to cost US\$ 10 per DALY saved (Gilson et al., 1997¹⁷⁵).

It is likely that the costs of VCT will fall as testing methods get cheaper (Meda et al., 1999¹⁷⁶) and innovative approaches to counselling may reduce costs. Furthermore, if VCT is targeted at couples and at people of higher risk this will also increase cost-effectiveness.

The cost-effectiveness of blood-donor counselling has also been determined. There is no policy on donor notification and HIV counselling for blood donors in India. If existing staff and infrastructure were used, the additional cost of providing these services to all blood donors would cost US\$ 1.2 per donor (Dhiingra-Kumar, 1998¹⁷⁷). The author states that this intervention would enhance blood safety by “minimizing blood wastage, reducing HIV seroprevalence in donated blood, developing a health donor pool, in addition to facilitating life-style changes and behaviour modification in the donors”.

5.2 *Industrialized countries*

A cost-benefit analysis was performed on the CDC VCT, referral and partner notification service (Holtgrave et al., 1993¹⁷⁸). Assuming that for every 100 people identified with HIV 20 new HIV infections are averted, they conclude that the cost of the programme is US\$ 188 217 600 and the economic benefits of this expenditure

are US\$ 3 781 918 000. The resultant benefit-cost ratio is 20.09. Sensitivity analysis showed that the benefit-cost ratio is greater than 1 for all considered cases, strongly suggesting that publicly funded VCT, referral and partner notification services result in a net economic gain to society. This analysis is highly dependent on the savings of treatment cost of the cases averted (TC) (lifetime TC for someone with HIV in the United States is estimated to be US\$ 85 000). In developing countries, although rates of seropositivity may be considerably higher, ARVs are not routinely available and treatment costs are much lower, this analysis may yield less cost-effective results.

Another model from the United States also demonstrates VCT (with or without partner notification) to be cost-effective in preventing HIV transmission (Varghese et al., 1999¹⁷⁹). For a cohort of 10 000 people attending an STI clinic with a seroprevalence of 1.5%, they estimated that VCT prevents 8 HIV infections and saves almost US\$ 1 000 000 (lifetime TC=US\$ 175 000). They estimate that the partner notification of the 113 people with HIV identified by VCT prevents another 1.2 infections. The cost to the provider translates into a cost of US\$ 32 000 per case prevented by VCT and an additional US\$ 28 000 for partner notification. In demonstrating the cost-effectiveness of this programme, the high treatment cost is a key factor.

A large multi-centre, randomized trial of VCT (brief or enhanced) versus HIV education estimates that brief counselling would result in prevention of new HIV cases at the cost of US\$ 12 098 per case prevented. Enhanced counselling may be slightly more effective but much more costly (US\$ 162 795 per case averted) (Kamb et al., 1998¹⁸⁰).

5.3 Cost effectiveness associated with MTCT interventions

Developing countries

Several models have been developed to examine the cost effectiveness of MTCT interventions (costs included drug costs and VCT costs) in the prevention of paediatric HIV infection MTCT and the costs per HIV case averted and cost per DALY. The most recent model using efficacy data from the HIVNET 012 trial is found next page.

Table 7: Costs and cost-effectiveness of ARV treatments for MTCT interventions

ARV Treatment	Cost/DALY (US\$)	Cost/HIV case averted (US\$)	Comments	Place, date of data and source
Single dose nevirapine (HIVNET012 regimen)			Efficacy in breastfeeding population	Marseille 1999 ¹⁸¹ sub-Saharan Africa
• universal treatment	5.25	138		
• targeted treatment	11.29	298		
• targeted treatment	19.18	506		
• targeted treatment	46.32			
• targeted treatment				
• targeted treatment				
• targeted treatment				
• targeted treatment				
076 protocol no formula feeds (12.5% HIV seropositivity)	Approx. 40-60 (depending on life expectancy)	3748 1115 (if productivity losses included)	Efficacy in non-breastfeeding population (costs of BMS not included)	Mansergh 1996 ¹⁸² Model for “a developing country”
Thailand regimen Short course ZDV no formula feeds (12.5% HIV seropositivity)		1269	Efficacy in non-breastfeeding population (costs of BMS not included)	Mansergh 1998 ¹⁸³ sub-Saharan Africa
ZDV & 3tc no formula feeds A)36 weeks-1 week Post-partum	274	5134		Marseille 1998 ¹⁸⁴ Model for low- and middle-income countries
B)intra-partum-1 week post-partum	143	2680		
C)intra-partum (15% HIV seropositivity)	60	1129		
Thailand regimen Short course ZDV No formula feeds	86-200			Wilkinson 1998 ¹⁸⁵ Model for Hlabisa District, S. Africa

Costs considered in the models

Drug costs
Marseille 1999 – 4 US\$ wholesale US price
Mansergh 1996 – (1US \$ per 300mg tablet) “market price”.
Mansergh 1998 – 33% of market price
Marseille 1998 – wholesale US price

VCT costs per women tested
Marseille 1999 – 7.3 US\$
Mansergh 1996 – 18.5 US\$
Mansergh 1998 – 8 US\$
Marseille 1998 – 4 US\$

Cost savings considered in these models**Lifetime cost per infant HIV case**

(including direct costs of HIV/AIDS care per case and indirect cost of lost productivity per case)

Marseille 1999 – 0-281 US\$
Mansergh 1996 – 3029 US\$
Mansergh 1998 – 3302 US\$
Marseille 1998 – US\$

Industrialized countries

Cost and benefit to the mother following VCT for MTCT

Antenatal testing is undertaken primarily to offer interventions to prevent MTCT. However, the diagnosis of HIV has implications for the mother herself. In many industrialized and some middle-income countries this diagnosis will allow her earlier access to ARV therapy for treatment of her own HIV disease and may prevent HIV transmission to a negative sexual partner. A model has been developed that assesses the health services costs and benefits for the woman of an earlier HIV diagnosis as a result of antenatal testing (Gibb et al., 1999¹⁸⁶). They estimated that women were diagnosed a median of 20.4 months earlier as a result of antenatal VCT, with a cost of US\$ 76 887 per life-year gained.

6. Negative outcomes following VCT

Balanced against the advantages following VCT there are potential negative consequences of VCT for the individual and his or her family (Colebunders et al., 1993¹⁸⁷).

Box 14: Negative outcomes following VCT

Summary

The putative disadvantages of VCT is that those who test seropositive may be discriminated against, suffer abuse or abandonment or may have serious emotional reactions to a seropositive result. However, in the majority of studies examining short- and long-term follow-up such negative outcomes are rare. Furthermore, they can be minimized with ongoing counselling and support and sensitive discussion around disclosure, especially for women.

➤ Abandonment and abuse

Some studies from sub-Saharan Africa have reported high levels of abuse of seropositive women following VCT. However, these can be minimized when women have sensitive counselling about disclosure and ongoing support following VCT.

➤ Marital break-up

In some studies marital break-up following VCT is reported as being high, especially for women in a sero-discordant relationship. Although this may result in hardship for women, it is not always a negative outcome.

➤ Discrimination

There are many anecdotal reports of people facing discrimination following VCT in seeking employment, entry to religious orders, access to education, application for immigration and visas and access to health care. These negative consequences of testing seropos-

itive should be challenged by advocacy and legislation and not be viewed as a negative outcome of the VCT process.

➤ **Psychological distress, stress and depression**

Emotional distress upon learning that one has a seropositive HIV result is a rational response. However, for the majority of people, severe distress is short lived and can be eased by ongoing support from family members, friends and health workers.

The stress following testing seropositive can be balanced against the feelings of relief of those who test seronegative. Furthermore, it has been shown that untested people or people who do not know their HIV test results (but feel at risk from HIV infection) are not free from this stress and uncertainty. Home HIV testing services may leave seropositive people particularly vulnerable since follow-up of clients is not ensured.

Anticipating and meeting individuals psychological needs following HIV testing is therefore important when developing a VCT service.

6.1 Abandonment and abuse

Serious sequelae for women following VCT has been reported in a study from Nairobi, Kenya (Temmerman et al., 1995)¹⁸⁸. Seropositive women who received VCT in an antenatal setting reported high levels of negative outcomes. Of the 324 women who were found to be seropositive only 66 (27.2%) communicated their test result to their partner and only 21 partners subsequently tested. Eleven seropositive women were chased away from their house or replaced by another wife, seven were beaten up and one committed suicide.

Studies from Rwanda have also noted the burden of physical and emotional violence, as well as the financial difficulties that occur to women who test seropositive (Keogh et al., 1994)¹⁸⁹, and Straten et al., 1995¹⁹⁰).

In a study from the United Republic of Tanzania, 340 female clients were followed up for 3 months following VCT to examine the relationship between HIV serostatus, domestic violence and disclosure (Maman, 1999)¹⁹¹, Maman et al., 2000¹⁹²). Both those who tested seropositive and seronegative experienced high levels of physical violence. In the study, 54.0% of seropositive women and 32.3% of seronegative women said that they had had at least one physically abusive partner *in their lifetime, before attending VCT*. Seropositive women were significantly more likely than seronegative women to report a physically violent episode with their current partner in the last three months (31% versus 16.2%). It is not revealed whether the violence following VCT was related to disclosure of a positive status or a reflection of the higher level of violence experienced by women who subsequently were found to be seropositive.

The multi-centre study (Gregorich et al., 1998)¹⁹³ found that the most commonly endorsed life events were, however, positive: strengthening of a sexual relationship (39%, more common among couples), increased emotional support from peers (29%) and increased emotional support from families (23%). Negative life events were also reported. With the exception of the break-up of sexual relationships (22%), however,

negative life events were uncommon (1-4% overall). There were no significant differences between those who received VCT versus health information in reported levels of positive or negative life events.

Although negative life events were uncommon in this study, they were significantly more likely to be experienced by people testing seropositive. Among those assigned to the VCT group at baseline, seropositives were more likely than seronegatives to be estranged by peers (1% versus 2% $p=0.01$), discriminated against by employees (1% versus 2% $p=0.06$) and neglected by family (2% versus 4% $p<0.05$). Seropositive women *enrolled as a couple* reported higher rates of physical abuse (18% versus 5% overall NS), and the break-up of a marriage (15% versus 3% overall NS). This highlights the need for additional services for women in relationships who test seropositive.

6.2 Marital break-up

A study of serodiscordant couples from Kinshasa showed that at the time of testing 18 couples experienced acute psychological distress, such as threatened suicide, a husband's family chasing the woman from the house and accusations of infidelity. However, intensive home-based counselling by trained nurses resolved these difficulties in all but three couples, who subsequently divorced (Kamenga et al., 1991¹⁹⁴). In all three cases the woman was seropositive and the man seronegative. The counsellors enabled reconciliation in the majority of cases, but this involved providing high-quality, flexible and intensive counselling services for couples.

In the multi-centre study high levels of marital break-up were reported (Gregorich et al., 1998). However, the authors conclude that marital break-up should not be seen as a negative outcome, rather it may be a risk-reduction strategy. At the same time, women in sub-Saharan Africa whose husbands leave them may be blamed by their families and suffer, along with their children, financial and material hardship.

6.3 Discrimination

There are many anecdotal examples of discrimination following VCT, particularly for those testing seropositive.

- **Employment.** Some countries have employment laws that discriminate against people with HIV. This discrimination is now being challenged. In South Africa the AIDS Law Project (ALP) acted on behalf of a job applicant who, during 1997, was refused employment by South African Airways as a cabin attendant because he was diagnosed as living with HIV. In May 2000, the ALP successfully challenged the airline's policy of refusing to employ people solely because they test positive for HIV during pre-employment screening. However, in many other countries pre-employment HIV screening and discrimination continues to be practised.
- **Entry into religious orders.** Many countries in sub-Saharan Africa insist on HIV-testing candidates before they enter religious orders, excluding those who test seropositive from training as priests or nuns (Baggaley, 1994¹⁹⁵).

- **Insurance.** Many insurance policies exclude people with HIV.
- **Education.** HIV testing is required by some institutions before offering further education.
- **Foreign travel and immigration.** Some countries require HIV testing prior to issue of a visa or entry permit.
- **Medical treatment.** Some people with HIV report discrimination from health workers following VCT. A study from the United States showed that when women from San Francisco were questioned following antenatal VCT they said that they had experienced higher levels of health care discrimination, personal isolation and negative psychological sequelae than their seronegative counterparts (Lester et al., 1995¹⁹⁶).

6.4 Psychological distress, stress and depression

Finding out that one is seropositive, as with other serious medical diagnosis, will almost inevitably cause shock and distress and have a major effect on the individual and his or her family (Dautzenberg et al., 1992¹⁹⁷, Ankrah 1993¹⁹⁸, Lippman et al., 1993¹⁹⁹). The aim of counselling is to help the person understand, accept and cope with the diagnosis and prevent serious reactions such as suicide or long-term intractable depression.

Developing countries

In Rwanda, a prospective study of seropositive women found that although the majority reported good morale, chronic difficulties with sleep, performing daily routine and feelings of depression were reported by a third of the women (Keogh et al., 1994²⁰⁰).

In Zambia, although many people who tested seropositive expressed sadness, anger or anxiety following testing this was relatively short lived and no cases of attempted suicide occurred (Baggaley et al., 1998). Some people who had suspected that they were positive said that they felt at ease on receiving their result, since they were now able to understand symptoms and make plans for treatment or for their dependants. People who tested seronegative expressed relief, but some also expressed guilt or sadness when partners or family members had tested positive.

In the multi-centre trial 81 people were interviewed in depth about their emotional feelings following VCT (Sangiwa, 2000²⁰¹). Seronegative clients reported feelings of relief, decreased anxiety, improved hope and increased confidence in themselves. Seropositive people reported better coping skills to deal with their situation, increased hope, disappearance of suicidal thoughts and help in decreasing isolation and normalizing their situation. Among seropositive people, most distress was described as transient. However, some participants reported persistent feelings of sadness, desperation and a sense of loss as they felt they may have to give up having children and abstain from sex out of concern about infecting others.

Industrialized countries

MSM

There have been several studies examining psychological outcomes following testing among MSM. Two studies show increases in stress and depression for

those testing positive. Nevertheless, the long-term outcomes are not reported and very serious consequences (such as suicide) are not reported. In one study there was no difference in psychological outcomes between men who did not know their status and those who did.

A study of homosexual men showed that those who tested seropositive following VCT were more likely to suffer adverse consequences such as stress, depression and break-up of their primary relationship than those who tested seronegative or those who refused testing (Coates et al., 1987²⁰²).

Another study compared MSM who were aware of their HIV status with men who had been tested but declined to receive their test result (Doll et al., 1990²⁰³). Those who chose to learn their status were no more likely to report depression or anxiety following testing than those who chose not to know their status.

In a study of 22 seropositive MSM, 22 seronegative MSM and 12 men who were tested (but did not want to know their HIV status), subjects who tested positive experienced an increase in anxiety, depression and AIDS anxiety. Subjects who tested negative experienced a decrease in these feelings after learning these results (Huggins et al., 1991). People who did not learn their results experienced no change in these feelings.

In a small study of IDUs attending a detoxification programme in Long Island, the United States, people testing seropositive displayed a wide range of emotional reactions to learning their results (Magura et al., 1990²⁰⁴). There were, however, no serious or damaging reactions. People with seronegative results were uniformly relieved. Almost all had informed someone of their status with unremarkable consequences.

Blood donors

A study from New York of seropositive blood donors showed that depressive symptoms scores for both men and women were substantially higher than scores typically found in representative population samples. More than a quarter of men and a third of women reported seeking psychological or psychiatric services in the first few weeks following notification of their positive result (Cleary et al., 1993²⁰⁵).

Home testing

In the home sampling services, used extensively in the United States, seropositive people receive their test results over the phone (Branson, 1998²⁰⁶). From a sample of 865 seropositive people telephone counsellors said that 7% expressed shock or dismay at an unexpected positive result and 5% hung up immediately and one client expressed suicidal thoughts (the phone counsellor ascertained he was "with a friend who could give mental health support"). Although 65% of people accepted referral there is not information as to whether people took up the referral or the long-term psychological impact of this type of service.

7. Operational

Many VCT services are monitored by examining data on demand and uptake of service, number of people being tested following counselling and rates for collecting HIV results.

7.1 Uptake, return rates and acceptability

Uptake of services has often been regarded as an important measure of VCT services "success". Uptake of VCT varies widely within and between VCT service types, communities and countries.

MTCT settings

Research settings

Uptake and return rate of VCT associated with MTCT interventions has been studied in detail. Thirteen studies from west (Abidjan, Bobo-Dioulasso), east (Addis Ababa, Dar Es Salaam, Mombasa, Nairobi,) and southern Africa (Blantyre, Durban, Harare, Lusaka, Soweto) and one from Thailand were included in a cross-sectional mailing survey about the acceptability of VCT and various MTCT interventions in antenatal clinics (Cartoux et al., 1998)²⁰⁷. All respondents represented research projects, rather than operational sites. The median overall acceptability was 65%, ranging from 33-95%. Where several studies were conducted in the same country, pregnant women had similar attitudes to HIV testing. The main reason for not wanting an HIV test was "wanting to discuss with partner". Five studies had overall acceptability rates of >70%, with high return rates. In the five studies where all information was available 1-4% of *all women* offered VCT and 11-35% of *all seropositive women*, were finally included in the MTCT intervention projects. These results were obtained from pilot research sites. The authors note that "fighting against HIV discrimination" will be important to improve VCT acceptability and uptake.

Table 8: Uptake of VCT at MTCT sites

	Acceptance rate(%)	Return rate (%) (%) rate	Return rate of HIV+ (%)	Overall acceptance
Bobo Dioulasso	92	82	81	76
Abidjan	78	58	38	46
Abidjan	77	63	59	49
Nairobi	99	70	54	69
Mombasa	95	68	62	68
Dar Es Salaam	88	86	72	75
Blantyre	53	83	75	45
Blantyre	90	68	69	61
Lusaka	81	100*	100	81
Harare	100	33	36	33
Soweto	97	83	50	80
Durban	98	98	100	95
Bangkok	100	95	90	95

*100% return rate likely to be due to simple/rapid testing employed at the site.

A study from Zimbabwe offering VCT to women at delivery or post partum had very poor uptake (Tavengwa et al., 2000²⁰⁸). This study offered vitamin A to mothers and/or babies in the 96 hours post delivery and offered infant feeding counselling to women who tested seropositive. Of 1 311 women who delivered 4 requested HIV tests at delivery and 118 (9%) between 2 and 8 weeks post partum. Even with free VCT and education and counselling on infant feeding most women choose not to learn their HIV status. This may reflect that the immediate/early post-partum period is not a practical time to offer VCT.

Operational settings

It is likely that the uptake and return rates will be different in operational settings. There is limited information available, but preliminary results from a large MTCT programme in Botswana show relatively low uptake of VCT during the first eight months of operation (Mazhani et al., 2000²⁰⁹). This is due to fear of a seropositive result, lack of facilities where partners can receive counselling and testing, worry about partners' reactions and the lack of effective treatment available for infected women themselves. It should not be seen as a "failing" of the project; it demonstrates that women are able to make choices on testing without coercion from counsellors. Furthermore, as the programme develops and the benefits of VCT associated with MTCT interventions (for both mothers and children) are more widely known and understood it would be expected that uptake would increase.

In Thailand VCT associated with MTCT interventions provided by the antenatal clinic is routinely offered in some provinces. In a study exploring 24 465 women attending 27 hospital antenatal clinics 99% of women accepted VCT (Koetsawang et al., 2000²¹⁰).

Uptake of VCT in other operational settings varies considerably in the UNICEF/UNAIDS MTCT pilot sites. Differences in testing schedules, maturity of the epidemic, seroprevalence in the community and attitudes to and availability of VCT in the community are thought to be important. It is also proposed that counsellors' attitudes towards testing at the sites may be a key factor in uptake.

Table 9: Uptake of VCT at MTCT operational sites

Country	Antenatal attendees	# (%) counselled (of those attending antenatal clinic)	# (%) tested (of those who received pre-test counselling)	% HIV +ve (of those testing)	# (%) returned for test results
1. Uganda*		1111	776 (70%)	105 (13.5%)	776 (100%)
2. Botswana** (Gaborone & Francistown)	8781	5078 (58%)	2325 (46%)	933 (40%)	
3. Rwanda* Kicukiro HC, Kigali	1122	1122 (100%)	781 (70%)	181 (23%)	624 (80%)
4. Côte d'Ivoire** (Yopongon, Abidjan)	4309	3756 (87%)	3452 (92%)	445 (13%)	2382 (69%)
5. Côte d'Ivoire (Project Retro-CI Abidjan)	9652** 3942*		6976 (72%) 2710 (68.5)	925 (13%) 294 (10.9%)	422 (45.6%) 294 (100%) (results for +ve only)
6. Zimbabwe** (Highfield, Harare & other Harare site)	3571	621 (17%)	470 (76%)	138 (29%)	
7. South Africa** Khayelitsha Mother-to-Child Pilot Project	6927		5459 (79%)	768 (14%)	
8. Thailand** (27 sites)		24465	(99%)	1509 (6%)	1353 (89.6%) (results for +ve only)
9. Brazil**		(14-60%)	(40-70%)		(95%)

*Simple/rapid testing with test results given within 1 hour

**ELISA – test results given at next ANC visit

Source: UNICEF interim project report May 2000 and other published/unpublished MTCT reports.

Provisional results from the Khayelitsha Mother-to-Child Pilot Project (funded by the provincial Government of the Western Cape in South Africa) show a high rate of acceptance of HIV testing (Sigxaxhe, 2000²¹¹).

In Zimbabwe 186 women attending an antenatal clinic in Chitungwisa were offered VCT as part of their antenatal care (Martin-Hetz et al., 2000²¹²). Although most women endorsed the multiple benefits of VCT, uptake was low, with only 23% of women consenting to VCT.

MTCT interventions have recently been introduced in antenatal clinic in Lusaka, as part of routine antenatal care. Prior to this a survey among antenatal attendees showed that when VCT was offered to women at less than 28 weeks, 28 to 36 weeks and more than 36 weeks, 71%, 62% and 64%, respectively, of women said that they would agreed to be tested (Chibwasha et al., 2000²¹³). It is not known whether this proposed high uptake will be translated into action when the services are running.

VCT centres

Uptake

Uptake of VCT in communities is dependent on societal factors as well as factors associated with delivery of the service. There may also be great differences in theoretical and actual uptake rates. For example, in Lusaka when students were asked if they wished to be tested for HIV there was a very high rate of interest. When the service was provided initially, uptake was very low. However, with time, there has been increasing demand for VCT in Lusaka (Baggaley et al., 1997²¹⁴). Another study from Zambia examined the readiness to utilize VCT services offered to 4 812 participants from rural and urban sites. Although 37% initially expressed willingness to use VCT services only 3.6% actually came for VCT (Rosensvard et al., 1998²¹⁵).

Return rates

The multi-site study from Nairobi and Dar Es Salaam randomized people to either receive VCT or health information. Of those assigned VCT 95% were actually tested. 75% of those in the United Republic of Tanzania and 85% of those in Kenya returned to collect their results (Balmer et al., 1998²¹⁶). In the United Republic of Tanzania, those who were seropositive, or enrolled as couples were less likely to return for their test results. When given access to unlimited counselling sessions most people chose to attend only two sessions, though those who tested seropositive had more counselling sessions.

In the Central African Republic a remarkably high 98.5% of a sample of 2 800 clients came back for their HIV test result after 1 week (Sehonou et al., 1999²¹⁷).

Couple counselling

When couples can be tested together it has been shown that this can be a very successful way of preventing HIV transmission in discordant couples. Uptake and acceptance of this option has been shown to vary considerably. In Lusaka, where it was developed as part of a VCT services, it was not popular and couples were very reluctant to be tested together (Baggaley et al., 1997).

Table 10: Couple counselling uptake

#(%) couples invited	#(%) couples confirmed	#(%) couples attended for group counselling	#(%) couples who attended for couple counselling	~#(%) couples tested
1927	1310 (68%)	424 (22%)	301 (15.6%)	136 (7%)

Kara couple counselling project

In Rwanda, where couple counselling was offered as part of a research project looking at discordant couples, it was a popular option. *No couple declined testing*, and none declined to authorize the investigators to divulge test results to a partner (King et al., 1993²¹⁸).

The striking difference in uptake of couple counselling in these two projects may represent a difference in the approaches of the counsellors and difference in

the target populations. However, the uptake of VCT services by a community is dependent on a wide range of factors, often beyond the control of the VCT service itself.

7.2 HIV testing methods: Simple-rapid (S/R) testing/same-day testing

If people are able to obtain their HIV test result within a few hours they are much more likely to receive their test result than if they have to wait one to two weeks. In the UNICEF/UNAIDS MTCT sites return rates were significantly higher in sites using S/R testing than ELISA (see table above).

Other MTCT projects using S/Rs or changing to S/R testing have shown high uptake rates:

- In Zambia, when S/R testing was offered in a pilot project at antenatal clinics, the overall acceptance was very high (81%) (Bhat et al., 1998²¹⁹). In the VCT services in Lusaka return rates were found to be higher when S/R testing replaced ELISA (Kayawe, 2000²²⁰).
- In Rwanda, HIV rapid testing was offered to all women attending the antenatal clinic in the central hospital in Kigali. Of the 1 223 women screened for HIV 68.7% returned to collect their HIV test results. Women were more likely to return if they were seronegative (71.3%) than if they were seropositive (63.9%) (Ladner et al., 1996²²¹).
- In Malawi, uptake of VCT had been low but increased four fold when simple/rapid testing was available (Msowoya et al., 2000²²²). Furthermore, 100% of clients received their test results compared with 68% when ELISA testing was used.
- In Kenya, same-day S/R testing has also been found to be acceptable, but worries about confidentiality are still a concern (Arthur et al., 2000²²³).
- In Guatemala, introduction of S/R testing significantly increased return rates (Samayoa et al., 2000²²⁴).
- In Côte d'Ivoire, although S/R testing increased the proportion of women receiving an HIV test result during the antenatal period (compared with ELISA testing), there was, overall, very poor adherence to ARV interventions to prevent MTCT (Sibailly et al., 2000²²⁵). This highlights that while uptake rates of VCT can be improved using S/R testing unless women receive adequate counselling to understand the benefits of testing it may not be translated into beneficial outcomes for the mother and child.

Box 15: Barriers to the uptake of VCT

Uptake of VCT services varies greatly between settings and between countries. There are several factors that may affect uptake rates or deter people from accessing services:

1. Method of reporting/confidentiality

VCT services have different methods of reporting HIV results, and this may influence uptake of the service, especially where people are worried about confidentiality or belong to groups that are already unsupported or marginalized. Many VCT services offer a *confidential service* where the individual and his or her counsellor share the test result. Test results may be kept by the clinic or there may be a policy of reporting seropositive to a referral centre (named reporting). The rationale for named reporting is that it is important for surveillance of HIV within communities/countries. Others VCT sites offer an *anonymous service*, where someone wanting a test can attend without giving his or her name.

A study from the United States looked at the effect of named reporting on the uptake of VCT services in publicly funded VCT programmes, where approximately 2.5 million people are tested for HIV each year (Nakashima et al., 1998²²⁶). It was feared that the introduction of named reporting to aid surveillance would cause some individuals to avoid testing. However, there was no significant effect on the use of testing facilities following the introduction of named reporting, though in some states there was a statistically non-significant reduction in testing among African Americans and IDUs.

Other studies suggest, however, that the introduction of anonymous testing increases testing in higher-risk populations, such as MSM and IDUs (Fehrs et al., 1988²²⁷, Hoxworth et al., 1994²²⁸, Hirano et al., 1994²²⁹). Other studies from the United States have also reported that ending anonymous services results in a decline in testing of vulnerable populations (Hertz-Picciotto et al., 1996²³⁰, Irwin et al., 1996²³¹).

2. Stigma/societal factors/current events

Stigma and discrimination may be important factors in the uptake of VCT in different communities. It has been postulated that political commitment to HIV prevention and care have led to less discrimination and, hence, higher demand for VCT in Uganda when compared to neighbouring countries. It has also been argued that, conversely, it is the large number of people who have been tested that is a major factor in promoting normalization and reducing stigma and discrimination associated with HIV

It has been shown that a role model or valued member of the community declaring that he or she has been tested is important in reducing stigma and increasing the uptake of HIV testing. For example, when Magic Johnson announced that he had been tested and was seropositive there was a significant rise in people requesting VCT in the United States (CDC 1993²³²).

3. Availability of treatment and ARVs

In countries where ARVs and other effective medical interventions (such as interventions to prevent MTCT) are available for people with HIV, there are considerable advantages to people with HIV being diagnosed early. This has changed attitudes of

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health workers as well as people who are at risk from HIV infection in industrialized countries to VCT, resulting in a greater uptake.

In developing countries, the lack of ARVs and medical and social support services available for people with HIV is reported as a reason for the poor uptake of VCT (Baggaley et al., 1995)²³³.

4. Simple-rapid (S/R) testing/same-day testing

Many studies have shown that if people are able to obtain their HIV test result within a few hours using simple/rapid technologies they are much more likely to receive their test result than if they have to wait one to two weeks. Thus, uptake rates of VCT can be improved using S/R testing. However, with S/R testing there is a possibility that people may not have adequate thinking time to make an informed and voluntary decision about testing.

5. Community mobilization and IEC

Unless VCT services are promoted as part of comprehensive HIV prevention, care and support uptake is likely to be poor. Provision of adequate IEC and community mobilization is thought to be an important element in ensuring uptake of MTCT services associated with MTCT interventions (UNICEF, 2000).

6. Poor quality of services

In some countries VCT services are under-utilized because the services they offer are inadequate and do not meet client needs. A study from India found that some clients who had tested at hospital sites were found to be unaware of their HIV status and had not received any follow up (Abraham et al., 1998)²³⁴. The authors state that services should match the needs of the target group, including the medical and emotional needs, to maximize client uptake, participation and involvement.

Poor quality of VCT services was also noted to be a considerable problem in a study from South Africa (Viljoen et al., 1998)²³⁵. Only 85% of people interviewed had given consent before being tested and only 48% had had "adequate" pre-test counselling. The authors state that the lack of behavioural changes following the VCT services could be attributable to the poor standard of counselling observed.

In Kinshasa (DRC) counsellors noted that in clinical settings pre-test counselling was not often done. Consequently, results were often not relayed to the client. Medical staff themselves often had an unhelpful attitude to VCT and were reluctant to give positive results to clients (Denolf et al., 2000)²³⁶.

8. Client satisfaction with the service

Client satisfaction following VCT has been looked at in several studies. It is, nevertheless, difficult to develop objective measures of client satisfaction. In most studies levels of client satisfaction are reported as being high. This may be in part because clients do not want to upset their health providers, or feel that criticizing a service would jeopardize their future care. The following studies all used client exit interviews, either immediately following a counselling session or as part of a longer-term, follow-up study:

- A study from Myanmar (Kywe et al., 1996²³⁷ and Thu, 1997²³⁸) looked at the acceptability of VCT services. Data were collected on the content of counselling sessions and on client satisfaction of counselling. Of those people attending for VCT 90% were “satisfied with the counselling services they received”.
- In Zambia, of 377 people who had attended a VCT centre, 94% had discussed safer sex with their counsellors and 89% said that they had found the discussion helpful in making decisions. The majority said that they had found counselling a useful experience and that it had helped them cope with their status. They also said that the links to support services were important (Kayawe et al., 1998²³⁹).
- The “New Start” project in Zimbabwe has assessed client satisfaction using exit interviews and found that 80% were satisfied with the service (PSI, 1999²⁴⁰).
- In the multi-centre trial a sample of 81 clients were interviewed at 6 months following testing (Sangiwa, 2000²⁴¹). Most were satisfied with the service and appreciated being made welcome, respected by the counsellors and provided with a level of continuity (seeing the same counsellor at pre- and post-test counselling). The service’s confidentiality and the fact that the counsellors told them the truth was also said to be important. Those who tested seropositive mentioned as significant the value of ongoing supportive counselling for coping with living with HIV and staying healthy.
- In Budapest, Hungary, in an evaluation of an anonymous VCT centre, 94% of the 2000 respondents were satisfied with the services (Csepe et al., 1998²⁴²).
- In Abidjan, Côte d’Ivoire interviews of counsellors revealed that 99% of clients appreciated VCT services (Doumatey et al., 2000²⁴³).

In a study carried out by the Kenya Association of Professional Counsellors 100 counselling sessions were reviewed through client exit interviews, counsellor self-assessment questionnaires and supervisor evaluation of audio taped sessions. The ratings by the three groups broadly concurred and, in general, the sessions were deemed to be of high quality. Counsellors tended to under-rate their effectiveness, whereas clients and the supervisor ratings were very closely matched. This suggests that quality assurance in counselling could be conducted cheaply and effectively using client exit interviews (Rachier et al., 2000²⁴⁴).

9. Counselling without testing and other behavioural interventions

In many settings HIV counselling is available without testing. This option is cheaper and does not require a laboratory infrastructure and distribution system for test kits and has the potential to reach large numbers of people.

In rural Uganda a community-based counselling service was established to offer HIV counselling without testing (Mugula et al., 1995²⁴⁵). Attendance rose from 80 per month in 1993, to 400 per month in 1995. Counselling centred on safer sex advice and condoms were distributed by the project. Uptake of condoms also increased considerably during this period.

In other settings where HIV counselling is offered without testing this can lead to client frustration since clients who following counselling are eager to be tested.

A study from the United States showed that the type of counselling given was important in HIV prevention. The study looked at the effect of “brief and focused motivational/skills-building, HIV risk-reduction counselling” versus “educational counselling”. They found that condom use rose from 22-66% (90 days after counselling) in the former group compared with 27-43% in the latter group (Kalichman et al., 1998²⁴⁶).

Other behavioural interventions

There have been several studies looking at the efficacy of behavioural interventions without HIV testing to reduce HIV risk behaviour. Three studies have shown beneficial outcomes of these interventions (measured as reductions in the incidence of STIs).

The most successful behavioural intervention trial described is in ethnic minority women in the United States (Shain, 1999²⁴⁷). Six hundred and seventeen women with STIs were recruited and randomized to receive either group counselling (three weekly sessions of three to four hours) or a fifteen-minute health talk with a nurse. The women who received the group counselling had a 37% reduction in STIs compared with the health education group over a 12-month period.

A randomized controlled study from the United States showed that brief group counselling reduced HIV-risk behaviour and resulted in better knowledge about HIV, stronger intentions to adopt safer sex and lower numbers of reported STIs among low-income women (Carey et al., 1998²⁴⁸).

In a study from the United States, 5 758 seronegative people who attended an STI clinic were randomly allocated into 3 groups to assess the efficacy of counselling in promoting safer sex behaviour (Kamb et al., 1998 Project RESPECT²⁴⁹). The first group received in-depth “enhanced” counselling, the second received “brief” counselling and the third a brief didactic message that was typical of the normal care given by the clinics. In the first two groups receiving counselling a personalized risk-reduction plan was discussed. The participants were interviewed and examined at 6 and 12 months. Those

who had received counselling (both enhanced and brief) had 30% fewer STIs at 6 months and 20% fewer STIs at 12 months than those who had received the information alone. Reported condom use was also consistently higher in the counselling groups. The study took place at five sites and the results were consistent over all sites.

Some studies have shown increased reported condom use but no significant differences in STI rates:

A trial among high-risk clients from 37 clinics in the United States showed that those who participated in a small group, 7-session HIV risk-reduction programme were more likely to use condoms consistently over a 12-month follow-up when compared with a control group. However, there was no significant difference in STI rates (NIMH, 1998²⁵⁰).

In a trial from an STD clinic in London, MSM either attended a seven-hour workshop or were given a twenty-minute session with a counsellor (Imrie et al., 1999²⁵¹). Results showed that while there was a small increase in condom use there was no reduction in STIs.

10. Testing without counselling/minimal counselling

Home testing/home collection

Several different self-test kits have been developed allowing people to self-test at home. Home collection kits are also available and these allow users to collect their own sample (blood or saliva) at home and send it to a collecting facility for testing. The client telephones the centre after one week for the test result. If the result is negative he or she will receive the result via a recorded message. If the test result is seropositive he or she will be 'counselled' over the telephone and referred for further follow-up if required. Although home-testing may improve accessibility and acceptability of HIV testing, it has been suggested to have limited HIV prevention benefits and may lead to undesired behaviour (Mertens et al., 1994²⁵²).

In the United States, 174 316 people used home sample testing during the first year of its introduction and 97% of these people phoned for their test results service. The percentage of those who were seropositive was 0.95%. This is three times that estimated for the general population, and a similar rate to that found in VCT centres in the United States. A sample of 70 620 seronegative and 865 seronegative people using this service has been reviewed (Branson, 1998²⁵³). Of all users 60% (and 49% who tested positive) had never tested before. Of those who tested seropositive, 65% accepted referral for counselling, 23% said that they already had some sort of follow-up and 5% put the phone down immediately. Although there are no follow-up data on the people using this service it is used by people who are at risk from HIV infection and by many people who did not use other testing facilities.

While there are advantages to using home-collection and self-testing kits – they offer privacy and may provide a service for people who do not seek testing at VCT sites – they should be used with caution. Users must understand the need for a confirmatory test and about the window period. Regulations must be in place to ensure their quality and kits should have clear instructions and be easy to use.

There are also worries that people using self-test kits have no pre-test counselling, or access to follow-up care and support, and that people may be coerced into testing (see section 5).

There are still many reports of HIV testing being carried out in medical institutions without counselling. In a study from the Kenyatta hospital in Kenya, 50% of those tested did not receive any pre- or post-test counselling (Mwaura et al., 1998²⁵⁴). A study from Russia indicated that in 80% of cases HIV testing was not accompanied by any pre- or post-test counselling (Nikitina, 1998²⁵⁵).

Peer education/counselling

A study that introduced peer educators to communicate risk reduction among gay men consistently produced reductions in high-risk sexual behaviour (unprotected anal intercourse was reduced to 15-29% of baseline levels) in the three intervention cities (Kelly et al., 1992²⁵⁶).

11. Conclusion

In this review of VCT outcomes, the majority of studies reveal benefits following VCT. However, many of the studies are descriptive, without control groups and have end points that rely on reported behavioural data (such as number of sexual partners or condom use) that are not supported with more objective outcomes. In most of these studies there are, however, clear preliminary indicators that VCT is important in helping people reduce risky behaviour, although societal and cultural pressures may sometimes override these. VCT is also shown to be important in enabling PLHA to access appropriate services, make decisions about future and family planning and benefit from interventions to prevent HIV-associated infections and MTCT. VCT cannot prevent PLHA from the inevitable emotional stress when they learn about a seropositive result, but it can help people to understand, accept and cope. VCT services can also help those who test seronegative in future planning and in obtaining HIV preventive services to help them adopt and maintain safe sexual and injecting practices. There is, however, very little information on whether behaviour changes for both those who test seropositive and seronegative can be maintained in the long term.

Changing sexual behaviour following VCT is influenced by many factors and is easier if both partners can be counselled and tested together. Those studies that show the most consistent reduction in risky sexual behaviour are among couples who attended VCT together.

A small number of studies report adverse consequences following VCT (such as violence, abandonment and break-up of relationships) and many studies had

anticipated that these would be difficulties. However, in the majority of studies these were rare and could be minimized by counselling, particularly about disclosure.

Most of the studies that are more rigorously designed and have more objective endpoints (such as seroconversion rates or STI rates) are from industrialized countries and among MSM and IDUs. Although many of these studies show significant reductions in risky behaviour, the results are not consistent. Other societal and behavioural factors may be important in determining sexual and injecting behaviour in these groups and results cannot be generalized to heterosexuals from developing countries.

When reviewing VCT studies it is difficult to make comparisons between the VCT interventions as these vary considerably between studies. In most studies the content and duration of the pre- and post-test counselling and the availability of ongoing counselling and support services were inadequately described. Although several studies show that VCT is superior to health education and in-depth counselling superior to brief information-giving, it is not known what the key elements are in VCT that are most important in motivating long-term behaviour change.

Denial, stigma and lack of openness about HIV are acknowledged as being major barriers to HIV prevention and care in many high-prevalence countries. Although it is postulated that increased availability and uptake of VCT can overcome these barriers there are no studies that have explored this, and this area is in urgent need of investigation.

Even though VCT does enable many people to change their behaviour not all are able to do so and not all VCT interventions are similarly successful in motivating behaviour change in different settings and among a wide range of populations. However, no single intervention (particularly HIV testing with a relatively brief pre- and post-test counselling) should be expected to influence complex long-term behaviour in all people. VCT should be flexible and may need specific adaptation for specific groups of people. It should also be part of a more comprehensive programme that provides ongoing HIV prevention education and information, starting with HIV and sexual health education for young people before they become sexually active and reinforced at other contacts with health workers. Innovative strategies are important to reach marginalized groups and groups who are not regularly in contact with formal health sector.

Important questions about the effective implementation of VCT remain unanswered. How can VCT services be improved to maximize the behavioural impact? Can VCT services be made less costly so that they can be implemented more widely in developing countries? What are the long-term outcomes following VCT? How can VCT services be adapted to provide supportive care and HIV prevention for sex workers and their clients and other marginalized groups? How can VCT services associated with MTCT projects include husbands/partners and will this improve uptake and influence sexual behaviour? Will the wider availability of VCT promote normalization and reduce stigma in communities? These questions should be considered when designing VCT evaluations, particularly in developing countries that have the greatest burden of HIV.

Appendix

Studies from developing countries

Côte d'Ivoire

VCT services are available at several centres in Abidjan and in association with MTCT interventions at ANC clinics.

In an attempt to look at the effect of VCT on behaviour change, 208 seropositive people were interviewed from 7 different AIDS care centres there. Basic knowledge about HIV was good (Doumatey et al., 1998²⁵⁷). Reported sexual behaviour indicated that many people were practising safer sex:

Since testing seropositive

- 42% used condoms always
- 28% used condoms occasionally
- 26% had abstained since receiving a seropositive result
- 50% believed they were "more responsible sexually"
- 12% believed they may have infected their partner, even after testing
- 28% had partners who were *not* tested

However, there was no pre-test behavioural information, so the impact of VCT on sexual behaviour could not be adequately assessed.

Democratic Republic of Congo (former Zaire)

Limited VCT services were available for antenatal women but were curtailed because of political unrest. (See studies from Kinshasa (Kamenga et al., 1991²⁵⁸ under section 1.1 and Ryder et al., 1991²⁵⁹). Also see study on sex workers (Laga et al., 1994²⁶⁰ under section 1.1).

Ethiopia

A study of factory workers in Addis Ababa described their sexual behaviour prior to testing and knowledge about HIV transmission. Overall seropositivity among this group was 12%. As yet there are no data on behaviour change following VCT (Sahlu et al., 1999²⁶¹).

Kenya

VCT services are available at several NGO and government sites and in association with MTCT projects. In a study from Kenya women were offered VCT as part of their antenatal care. Women who tested positive and a comparison group of uninfected women were followed up for one year (Temmerman M, et al., 1990²⁶²). They had each received one session of post-test counselling where HIV, family planning and sexual behaviour were discussed. Family-planning use, condom use and pregnancy rates were similar in both groups. The authors conclude that this single session of counselling was therefore ineffective in this setting, in influencing decisions on subsequent condom use of reproductive behaviour. However, it may be difficult for women to influence safer sex behaviour in their relationships since, in the majority of cases, their sexual partners were unaware of their HIV status. Furthermore, in Kenya, as elsewhere, women often have difficulties in discussing HIV and sexual behaviour and insisting on condom use, especially with their long-term partner.

Rwanda

See under sections on seroincidence Section 1.1, and couple counselling 1.7 (Allen et al., 1992; 1993, Allen, Tice et al., 1992).

See section on partner disclosure, Section 1.6 (Ladner et al., 1995).

Uganda

Uganda has the most developed VCT services in sub-Saharan Africa. Since 1990 VCT has been available through the AIDS information (AIC) in Kampala, where over 380 000 people have been tested (UNAIDS, 1999²⁶³). Further VCT centres have subsequently been established throughout Uganda (Magombe et al., 1998²⁶⁴). There

The impact of Voluntary Counselling and Testing

are currently over 20 satellite sites in operation. The AIDS support organization (TASO) is closely associated with AIC and offers ongoing counselling and a wide range of support services for people with HIV.

There have been several studies looking at the effectiveness of the VCT service and the ongoing support services provided by TASO and AIC.

A study of 250 HIV consecutive positive and 250 HIV negative people attending the AIC compared them with 200 consecutive clients who had previously tested negative and were attending for a repeat test (Muller et al., 1992²⁶⁵). The majority of the people attending for repeat testing reported one sexual partner (67%) or sexual abstinence (25%). When compared with pre-test information from people attending the AIC for their first test, repeat testers were significantly less likely to report having casual sex (6% versus 25%). Repeat testers were also more likely to use condoms with casual sexual partners. Of the 200 repeat testers only 2 (1%) had seroconverted. It should be noted, however, that the "repeat testers" might differ from the "first-time testers".

An uncontrolled study of reported behaviour change at the AIC has shown significant changes in sexual behaviour following VCT (Moore et al., 1993²⁶⁶). Reported condom use rose from 10% to 89% with steady partners, and from 28% to 100% with non-steady partners of HIV seropositive clients. This study relied on reporting of sexual behaviour on a checklist questionnaire.

A quantitative and qualitative study from the TASO counselling service shows a good understanding of safer sex and a high level of safer sex behaviour following VCT (Kaleeba et al. 1997²⁶⁷, and TASO, 1999²⁶⁸). When seropositive people in the TASO evaluation reported current sexual practices, 45% (56% females and 28% males) said they were abstinent and 33% (26% females and 48% males) said they used condoms. Of those who said they were using condoms 81.3% said that they had done so after seeing the counsellors at TASO. Fifty-seven per cent of those who said that they were using condoms said that they were using them consistently, and seventy-four per cent said that they had used them in their last sexual encounter. The reported condom use was higher than that reported in the general population, where 10% of people said that they had "ever used" condoms (Konde-Lule & Sebina 1993²⁶⁹). In the most recent evaluation of TASO 12 120 records of clients attending between 1997-1999 were examined (Mukasa-Monico et al., 2000²⁷⁰). Condom use increased from 23% to 41% for women and 20% to 49% for men following VCT. Further increases in condom use were seen in people who had further post-test counselling sessions.

VCT in rural Uganda has also been evaluated. A small, uncontrolled study from rural Uganda reports condom use in 50% of people following VCT (Kamaya, 1998²⁷¹).

In a rural community cohort from Rakai VCT was promoted and provided free of charge (Lutalo et al., 2000²⁷², Nyblade et al., 2000²⁷³). Behaviour change in the 20 months following VCT was examined in four groups: seropositive people who received VCT (N=370), seronegative people who received VCT (N=2304), seropositive (N=562) and seronegative (N=2860) who did not receive VCT. For all groups there was not a statistically significant difference in *most* risk behaviours between those who had participated in VCT and those who had not. However, for both seropositive men and women who reported no condom use at the first survey, those who received VCT were more likely to report condom use at after 20 months compared with non-VCT recipients (23.5% versus 12.8% for men, 15.5% versus 7.6% for women $p=0.05$ for both). Furthermore, women who were seropositive and had received VCT had higher rates of condom use than seronegative women who received VCT (12.3% versus 8.3%). Among males condom use was moderately higher (but not significantly different) among seropositives than seronegatives following VCT (23.6% versus 19.0%). However, it may be more appropriate to compare both seropositive and seronegative with unaware controls as the aim of VCT is to promote condom use for all clients unless seronegative people are in a mutually faithful relationship with someone who had been tested negative.

Zambia

VCT services have been available in Lusaka since 1992, when Kara Counselling and Training Trust developed them in conjunction with support services for PLHA. Several studies from Kara have looked at sexual behaviour, emotional and social outcomes and coping following testing. Other counselling projects have been developed associated with hospitals or home-based care programmes (Jordan, 1995²⁷⁴). In 1999, a countrywide VCT service was started and is being introduced throughout Zambia (Ministry of Health interim report, 2000). Following successful pilot projects of VCT associated with MTCT interventions, this service is also being expanded (see Chibweshia et al., in section 7 operational aspects of VCT).

Studies from the Kara Counselling service in Zambia have demonstrated some changes in sexual behaviour following VCT (Kelly et al., 1994²⁷⁵, Baggaley et al., 1998^{276,277}). Following VCT both those testing seropos-

itive and seronegative were more likely to use condoms and reduced their number of causal sexual partners, when compared with reported behaviour prior to testing. However, in other studies from Kara, some women expressed difficulties about using safer sex methods because of poor communication with their sexual partner/s (Chanda et al., 1994²⁷⁸).

Also see under seroincidence/seroconversion Section 1.1 (Hira, 1990).

Zimbabwe

VCT services in Zimbabwe were not widely available until recently. Social marketing of VCT through The "New Start" project commenced in 1999, which to date has nine operational VCT centres, with others planned (PSI 1999²⁷⁹, Moses et al., 2000²⁸⁰, Sangiwa et al., 2000²⁸¹). An evaluation of these sites is currently taking place. These have been popular with both singles and couples. To date, 7 000 people have attended the sites, with 10% being couples. There have been no data presented (to date) on the social and behavioural consequences of testing. VCT services in Bulawayo have been studied (see Meursing et al., 1993/1995/1999 in Section 3.2 on access to ongoing emotional/psychological care).

The multi-centre trial: the United Republic of Tanzania, Kenya, Trinidad and Tobago

Recent results from the CAPS/AIDSCAP/WHO/UNAIDS multi-centre trial have given encouraging results (Coates et al., 1998²⁸², 1998²⁸³; Sangiwa et al., 1998²⁸⁴; 2000²⁸⁵; Kamenga et al., 2000²⁸⁶; Balmer et al., 2000²⁸⁷; Furlonge et al., 2000²⁸⁸, The VCT efficacy study group 2000²⁸⁹). This study was the first randomized trial of HIV counselling and testing from developing countries. Participants were randomized to receive either health information or VCT. The study was designed to compare the prevalence of self-reported, unprotected intercourse at six months follow-up between the groups. Information on the social and psychological consequences of receiving VCT was also collected, and a cost-effective analysis performed.

The results of the study (N=3 120, 1 534 males and 1 586 females) showed that percentage of *individuals* reporting unprotected intercourse with *non-primary* partners declined significantly, more for those receiving VCT than for those receiving health information (HI) only. (Males: 35% reduction in VCT group versus 13% in HI group; females: 39% reduction in VCT group versus 17% reduction in HI group).

Similar differences were observed in the number of unprotected episodes with non-primary partners (males: 37% in VCT group versus 12% reduction in HI group; females: 42% in VCT groups 12% reduction in HI group). Among those assigned to VCT at baseline, those diagnosed with HIV were more likely to change their sexual behaviour than those diagnosed as HIV negative.

The rate of incident STIs among men assigned to VCT was 46% less than those assigned to HI only (3.5% versus 1.9% $p = 0.1$), but rates among women were almost the same (6.2% versus 5.6%). Self-reports of unprotected sexual intercourse between baseline and first follow-up were strongly associated with incidents STIs at the first follow-up.

In *couples* (N=586), 74% were seroconcordant negative, 9% seroconcordant positive, and 17% were serodiscordant (6% were M+ F- and 11% were M- F+). At the first follow-up, both VCT and HI couples (in which one or both were seropositive) decreased significantly in the rate of unprotected intercourse with their study enrolment partners relative to couples in which both were negative.

Furthermore, VCT couples were significantly more likely to report reduced unprotected intercourse with their spouse than HI couples, but there was little change in reported sexual behaviour with secondary sexual partners.

This study, therefore, supports the efficacy of VCT in preventing HIV transmission in serodiscordant couples. Previous research in Africa and the United States has also suggested that VCT is more effective for HIV risk reduction when both partners participate in the process together, share their test results and formulate risk reduction plans based on their HIV test results.

India

The HIV incidence and prevalence is rapidly rising in India. The predominant mode of transmission has been through heterosexual contact between female sex workers and their clients. However, there is increasing seroprevalence among married monogamous women whose only risk factor was sexual contact with a husband who also has had an STI. In north-east India the number of cases of HIV infection is increasing due to IDUs. It has been estimated that by the end of 1999 there were 4 million people living with HIV in India.

The impact of Voluntary Counselling and Testing

Efforts to provide VCT started in India in 1987. By 1992, there was a national training programme for counsellors. There are six regional VCT centres. However, private medical practitioners, some of whom do not offer adequate counselling or ensure informed consent prior to testing, carry out much of the HIV testing. Anonymous VCT services are also being developed (Bhandari et al., 1998²⁹⁰). NGO services are popular and some report increased condom use following VCT (Kalyanasundaram, 1998²⁹¹).

In a study from Pune the role of VCT in HIV prevention among those who test negative was examined (Bentley et al., 1998²⁹²). There were 1 628 seronegative heterosexual men recruited from a STI clinic. They were seen every three months for repeat VCT for twenty-four months. Counselling was focused on reinforcing messages of monogamy, condom use with sexual partners and provision of condoms. This ongoing counselling and testing was positively associated with risk reduction behaviours. At six months men were 2.8 times – and at twenty-four months 4.7 times – more likely to consistently use condoms with sex workers.

Thailand

In Thailand the first cases of HIV were seen in 1984 and 1985 among IDUs. The epidemic rapidly became more widespread with increasing seroprevalence seen among female sex workers, males attending STI clinics and women attending antenatal clinics. By 1993, 600 000 to –800 000 people were estimated to be infected. The Thai Red Cross quickly established a network of VCT services. VCT services are also widely available in many government institutions (Guntamala et al., 1998²⁹³) and are now provided in some provinces associated with MTCT interventions.

In 1993, consecutive samples of 250 seropositive and seronegative patients were recruited to evaluate the effectiveness of VCT in promoting behaviour change (Phanuphak et al., 1994²⁹⁴). Following VCT most clients expressed the intention to reduce HIV risk behaviour in response to a positive or negative HIV test result (more so if seropositive). This study relies on intention to reduce HIV risk behaviour and although the results are encouraging they cannot be verified.

A study from Bangkok compared self-reported behaviour of seropositive people who had received VCT with those from a matched sample of seropositive people who were unaware of their status (Muller et al., 1995²⁹⁵). Of the people who had received VCT 84% reported that they had decreased their number of sexual partners since receiving it. They also reported more frequent condom use than did seropositive people who were unaware of their status.

Myanmar

There are estimated to be over 400 000 cases of HIV infection in Myanmar. VCT services have been added to 28 pre-existing health services in townships throughout Myanmar (see Kywe et al., 1996²⁹⁶ and Thu 1997²⁹⁷ under section 7 on the operational aspects of VCT).

Latin America and the Caribbean

VCT services have been developed in many countries in Latin America and the Caribbean. In Chile the NGO FRENASIDA (Chilean Association to prevent AIDS) has operated a VCT centre in association with the Government since 1991. The prevalence of HIV remains relatively low (in Santiago the estimated seroprevalence is 25.6 per 100 000 Caceres et al., 1996²⁹⁸ & UNAIDS 1999²⁹⁹). They report a relatively low uptake and low return for HIV testing but among those who do test almost 70% report having modified their behaviour in some way, including increased frequency of condom use (Gonzalez et al., 1997³⁰⁰).

In Brazil, currently all but two states there offer VCT services that are confidential and free of charge. Counselling services have been available since 1988, but the quality and uptake of these services varies considerably. Strategies to evaluate implementation of HIV prevention strategies by VCT sites have been developed (Passarelli et al., 2000³⁰¹). During 1997, ten public health services were visited. Although VCT counsellors were able to offer care and support for PLHA they were found not to be effective in helping PLHA to overcome their difficulties in adopting safer sex practices (Filgueiras et al., 2000³⁰²).

It is estimated that there are some 18 000 people with HIV in Jamaica. The counselling and community outreach programme (CCO) has been developed to offer psychosocial support for people with HIV.

Studies from industrialized countries

Students

A randomized-controlled trial of VCT versus HIV education alone was carried out among students (Wenger et al., 1992³⁰³). When interviewed at six months follow-up, the students in the VCT group had increased communication with sexual partners about the risk of HIV infection. However, no consistent differences among the groups in the number of sexual partners or the use of condoms were found at follow-up.

STI clinic attendees

In another study carried out by the same group in Los Angeles the effect of VCT versus AIDS education was looked at among consecutive attendees at an STI clinic (Wenger et al., 1991³⁰⁴). At follow-up the mean number of sexual partners decreased, but there was no significant difference between the groups. However, the VCT group questioned their most recent sexual partner/s more about HIV ($p=0.01$), "worried more about getting AIDS" ($P=0.03$), and tended to use condoms more often with their last sexual partner ($p=0.05$). Of VCT subjects, 40% versus 20% of the information group used condoms, avoided genital intercourse, or knew that their last sexual partner had a negative antibody test ($p=0.005$).

Women clinic attendees

A study of women attending family planning and gynaecology outpatients revealed that being tested for HIV did not result in any significant changes in condom use, self-reports of STIs or number of sexual partners in the four months following testing (Wilson et al., 1996³⁰⁵).

Another study from the United States compared the effects of VCT on sexual behaviour among women attending four primary health care clinics (Icovics et al., 1994³⁰⁶). One hundred and fifty-two seronegative women and seventy-eight women who had never been tested (matched for age and race) were questioned about their sexual behaviour at two weeks and three months after the VCT baseline. There were no significant differences in the groups and no significant changes in risk behaviour in either group. The authors suggest that women who seek VCT may have already made changes in their sexual behaviour prior to requesting VCT.

VCT sites

A study assessing the free, anonymous, public VCT service at two sites in North Carolina, had disappointing results (Landis et al., 1992³⁰⁷). No significant changes were found in high-risk sexual behaviour at follow-up.

Serodiscordant couples

See under section 1 (Padian et al., 1987).

In these studies the prevalence of HIV was relatively low. There were no people with seropositive results who took part in the intervention groups in the studies by Wenger et al. In the study by Icovics et al., women were recruited from clinics in southern Connecticut, where there is little morbidity or mortality from HIV outside higher risk groups. This may mean that while women are willing to undergo testing they do not perceive themselves to be at significant risk from HIV and therefore do not feel it is necessary to make changes in their sexual behaviour. This emphasizes the difficulties in making comparisons between studies from low-prevalence industrialized countries and much higher-prevalence developing countries.

Studies among MSM

Comparisons between groups before and after testing available

Some studies of sexual behaviour in MSM started before HIV testing was available, allowing comparisons of sexual behaviour before and after VCT was established.

A study from the United States followed a cohort of homosexual men from 1984, before HIV testing was available, until 1986 when HIV testing was available (Coates et al., 1987³⁰⁸). Men who were aware of their HIV status were significantly less likely to practise unsafe sex (12% of seropositive men, 18% of seronegative men and 27% of untested men practised unsafe sex). All groups had, however, started to change their sexual behaviour before HIV testing became available. All reported significantly higher rates of unprotected sexual intercourse before HIV testing was available (48% who ultimately tested positive, 49% who did not test and 41% who ultimately tested negative).

A study from the Netherlands also showed that MSM had started to change their sexual behaviour prior to VCT being made available (van Griensven et al., 1989³⁰⁹). They also showed that seropositive MSM were more likely to use condom during anal intercourse (with both steady and casual partners) than were seronegative and untested MSM.

Inconclusive studies

Several studies suggested that although there were considerable reductions in risky sexual behaviour over time these were not clearly associated with VCT.

A study from Canada followed a cohort of homosexual men from 1984-1987 (Schechter et al., 1988³¹⁰). Following VCT, the annual number of sexual partners fell for both those with seropositive and seronegative test results and there was a marked increase in condom use. More seronegatives than seropositives reported no condom used during anal intercourse with regular partners (45.7% versus 23.4%) and with casual partners (15.9% versus 1.5%). (There was, however, no control group of untested). A small group of people who had the largest number of casual sexual partners was also the most likely not to be using condoms with these partners. Although marked risk reduction was noted for MSM who were aware of their HIV status, a few men continued to put themselves at extremely high risk.

A study from Chicago showed that all MSM decreased risky sexual behaviour but there was no significant difference between men who were aware of their HIV status and those who were not (Ostrow et al., 1989³¹¹).

A study from the United States compared MSE who were aware of their HIV status, with men who had been tested but declined to receive their test result (Doll et al., 1990³¹²). Both groups had access to risk-reduction information. In both groups there was a significant decline in unsafe sexual behaviour, but these declines were independent of knowledge of HIV status and actual serostatus.

In a longitudinal study of 139 MSM from Boston, all groups (seropositive, seronegative and untested) showed a decline in risky sexual behaviour, but there was no difference between the groups (Zapa et al., 1991³¹³).

Twenty-two seropositive MSM, twenty-two seronegative MSM and twelve men who were tested (but did not want to know their HIV status) were surveyed one week and six months after testing (Huggins et al., 1991³¹⁴). All three groups altered their sexual behaviour, with no significant difference between the groups.

A study from four cities in the United Kingdom also showed no evidence for decreasing risky sexual behaviour following VCT (Dawson et al., 1991³¹⁵).

In a study from 16 small cities in the United States there were mixed findings (Roffman et al., 1995³¹⁶). Although MSM who had undergone VCT reported more condom use and had more protected penetrative sexual acts than untested MSM, they also had a significantly greater number of sexual partners. Therefore, overall untested and tested MSM reported a similar number of unprotected sexual acts.

Declines in risky sexual behaviour, associated with VCT

Several early studies do, however, show significant decreases in risk behaviour associated with VCT, with seropositive men showing greater reduction in risk behaviour than seronegative men or men who are unaware of their HIV status. It is suggested that learning about being seropositive had a greater impact on changing behaviour and showed that seronegative men were still putting themselves at risk from infection.

In a study from Baltimore, United States 1 001 MSM were offered VCT (Fox et al., 1987³¹⁷). Of those, 670 elected to have VCT and 311 declined (the two groups had similar baseline characteristics). All were counselled about safer sex. In all groups unsafe sexual practices declined, although disclosure of a seronegative test result led to a significantly smaller decline in these sexual activities

In Boston, MSM who tested seropositive were more likely to have protective sexual behaviour than seronegative or untested men (McCusker et al., 1988³¹⁸)

Three cohort studies (Cohn et al., 1988³¹⁹, Zones et al., 1986³²⁰, McKusick et al., 1990³²¹) and three cross-sectional studies also showed an association between VCT and reduction in risky sexual behaviour (Valdiserri et al., 1988³²², Frazer et al., 1988³²³, Ross 1988³²⁴).

Long-term studies, however, have shown that initial changes in sexual behaviour following VCT may be difficult to maintain. In a study from the United States, at two years 47% of people had “relapsed” (not used safer sex practices) at least once (Abid et al., 1991³²⁵).

Studies among IDUs

Harm reduction/safe injecting

Significant change in injecting practices attributable to VCT

Some studies have found increases in safe injecting practices following VCT.

- In a study of 933 IDUs attending a detoxification centre in Milan (Nicolosi et al., 1991³²⁶) a preventive intervention based on VCT was associated with a significant reduction in sharing of syringes and unsafe injecting practices compared with risk behaviour in IDUs who had not received the intervention. The latter group showed no change—or even an increase, despite general information and HIV health education campaigns.
- In a small study of IDUs attending a detoxification programme in Long Island, United States both seropositives and seronegatives had reduced risk behaviour (Magura et al., 1990³²⁷). There was, however, no untested control group for comparison.
- In a study from New York City, seronegative IDUs attending a methadone maintenance treatment programme were less likely to use unsafe injecting compared with seropositive or untested IDUs (Magura et al., 1991³²⁸).
- In a study from 12 European countries, seronegative compared seropositive, seronegative IDUs and IDUs who had not received VCT (Desenclos et al., 1993³²⁹). Seronegative IDUs reported higher rates of safe injecting compared with untested IDUs. Seropositive IDUs were also less likely to give their injecting equipment to other IDUs compared to IDUs who had not received VCT.
- In a study of 5 644 attendees at needle exchange programmes and detoxification centres in California, the factor most closely associated with not sharing syringes was having attended VCT (Watters et al., 1994³³⁰).
- Studies from Australia have shown the benefits of needle-exchange programmes (NEPs), methadone replacement and VCT services, resulting in low HIV prevalence rates among IDUs in Australia. However, it is difficult to attribute one intervention to this success (Drucker et al., 1998³³¹).
- VCT and NEPs have expanded substantially in New York. The percentage of IDUs using NEPs has risen from 20-54% and those using VCT from 51-81% during 1990-1997 (Des Jarlais et al., 2000³³²). A meta-analysis of studies among over 11 000 IDUs from New York during 1990-1997 has shown that knowledge of HIV status and attendance at NEPs were associated with less risk behaviour. Using a NEP had an OR=0.64 ($p<0.001$) for sharing at last injection and knowledge of a seropositive status had an OR=0.35 ($p<0.001$) for unsafe sex with primary sexual partner. During this time the HIV incidence fell from 4.4 per 100 person-years to 0.8 per 100 person-years for those at risk. The authors conclude that while there are multiple causes in the process of declining HIV incidence among IDUs in New York there is a clear pattern of increased use of NEPs and VCT which were temporally associated with a large reduction in HIV incidence.

No significant change in injecting practices attributable to VCT

- In a study from New York (associated with a methadone maintenance programme) most people testing seronegative and seropositive stopped injecting drugs. Those who continued to inject were more likely to use safe injecting practices, but there was no significant difference between those who were aware of their status and those who were not (Casadonte et al., 1990³³³).
- In a study from Washington, United States, 313 IDUs were randomly assigned to HIV education, HIV education plus VCT or a waiting list (Calsyn et al., 1992³³⁴). The sample as a whole decreases high-risk behaviour but there were no significant differences between the groups.

- In a study from Puerto Rico, VCT was offered to IDUs recruited from a street-selling area (Conlon et al., 1996³³⁵). Of the 374 participants 88% agreed to be tested and returned for their results and 73.5% were followed up and interviewed six months later. Of the 176 IDUs who reported a seronegative test result prior to base line, 26% were subsequently found to be seropositive. No significant difference was found between seropositive and seronegative IDU risk behaviour.
- In a study from central Massachusetts, 4 267 individuals were provided with VCT at a multi-site programme, including community clinics, drug treatment programmes and prisons. Half of those tested reported risk behaviour associated with IDU. A sample of 207 IDUs were followed up following VCT (McCusker et al., 1996³³⁶). Among those who continued to inject drugs there was a reduction in the percentage visiting shooting galleries following VCT but no other significant behaviour changes were reported.
- In a multi-centre study from the United States, 1 174 seronegative IDUs who were in drug treatment programmes were questioned about their injecting practices following VCT (Sabin et al., 2000³³⁷). VCT did not alter risk behaviour in these programmes.
- In a study of male IDUs attending drug treatment centres in Northern Thailand there was no difference in changing risk behaviours among those who had prior VCT and those who had not (Kawichai et al., 2000³³⁸). The authors conclude that HIV prevention programmes, including VCT, have been extensively introduced over the past decade in Thailand and have reduced the incidence of HIV. A general trend in reducing risk behaviours in Thais might have been the reason for not observing significant change in IDUs following VCT.
- One study has examined whether VCT increases the likelihood of IDUs adhering to a drug treatment programme (MacGowan et al., 1996³³⁹). Knowledge of HIV status did not affect retention.

Sexual behaviour

Significant change in sexual behaviour practices attributable to VCT

The majority of studies show a reduction in risky sexual behaviour of IDUs following VCT.

- In a study from 12 European countries seropositive IDUs reported higher rates of condom use compared with seronegative and untested IDUs. (Desenclos et al., 1993).
- In a study from New York City, seropositive IDUs attending a methadone maintenance treatment programme were more likely to use condoms compared with seronegative or untested IDUs (Magura et al., 1991).
- A study from Bangkok and New York City showed that seropositive IDUs were more likely to practise safer sex than seronegative or untested IDUs (Vanichseni et al., 1992³⁴⁰, 1993³⁴¹).
- In a study from Puerto Rico, following VCT, seropositive IDUs were less likely to report being sexually active and more likely to use condoms, than untested or seronegative IDUs (Colon et al., 1996).
- A study from New York found that seronegative IDUs who had received VCT were more likely to always use condoms than seronegatives who had not received VCT (Friedman et al., 1994³⁴²). However, this difference was not seen among seropositive who received VCT compared with seropositive who were unaware of their status. The authors attributed the similarity in condom use between tested and untested seropositive IDUs to changes in condom use made by IDUs who suspected that they were HIV infected and had thus made changes in their sexual behaviour based on this assumption.

These findings suggest that community interventions aimed at providing VCT – and thus detecting seropositive IDUs, counselling them about their status and assisting them to reduce the risk of transmitting HIV – are effective in reducing the spread of HIV from IDUs to their sexual partner/s.

In most studies, changes in behaviour to prevent sexual transmission of HIV are more marked among those who test seropositive than among those who test seronegative. This indicates that seronegative IDUs may be continuing to put themselves at risk from sexual transmission of HIV (particularly if their sexual partner is also an IDU). Emphasis on providing counselling about prevention of sexual transmission of HIV for IDUs who test negative is important.

No significant change in sexual behaviour attributable to VCT

Three VCT interventions for IDUs have not resulted in any significant changes in sexual behaviour that could be directly attributed to VCT (Nicolosi et al., 1991, McCusker et al., 1996, Calsyn et al., 1992).

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The Joint United Nations Programme on HIV/AIDS (UNAIDS) is the leading advocate for global action on HIV/AIDS. It brings together seven UN agencies in a common effort to fight the epidemic: the United Nations Children's Fund (UNICEF), the United Nations Development Programme (UNDP), the United Nations Population Fund (UNFPA), the United Nations International Drug Control Programme (UNDCP), the United Nations Educational, Scientific and Cultural Organization (UNESCO), the World Health Organization (WHO) and the World Bank.

UNAIDS both mobilizes the responses to the epidemic of its seven cosponsoring organizations and supplements these efforts with special initiatives. Its purpose is to lead and assist an expansion of the international response to HIV on all fronts: medical, public health, social, economic, cultural, political and human rights. UNAIDS works with a broad range of partners – governmental and NGO, business, scientific and lay – to share knowledge, skills and best practice across boundaries.

Many approaches to HIV prevention and care require people to know their HIV status. The importance of voluntary counselling and testing (VCT) in achieving this end has been acknowledged in the recent wider promotion and development of VCT services. VCT has an important role in HIV prevention to help people make changes in their sexual behaviour so as to avoid transmitting HIV to sexual partners if seropositive, and to remain seronegative if negative. The other major role of VCT is in facilitating the early and appropriate uptake of service for those people testing HIV positive and negative, including medical care, family planning, emotional and social support, legal advice and counselling for positive living. VCT is also an essential if women and their families are to benefit from interventions to prevent mother-to-child transmission of HIV. Increasing access to VCT can also be important in challenging stigma, promoting awareness and supporting human rights.

However, since most countries where HIV has a major impact are also the poorest with the fewest resources, VCT is often still not widely available in the highest-prevalence countries. For VCT services to be prioritized and for resources to be provided for their development, demonstrating their effectiveness is essential. Concentrating on information from developing countries, with some examples from industrialized countries, this paper examines VCT's diverse roles, the broad range of outcomes that can be evaluated and the challenges associated with VCT evaluation, particularly the complexity of the VCT process.



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