A Descriptive Study of Voluntary Counseling and Testing and Rapid HIV Testing in the Accra Metro District, Ghana

Master’s thesis submitted to the Medical Faculty Charité of Humboldt University at Berlin in partial fulfilment of the requirements for the award of a Master of Science degree in International Health

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Prevention must be the mainstay of our response.

- U.N. General Assembly Declaration of Commitment on HIV/AIDS, 2001
*Acknowledgements*

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~ Medase.
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II. List of Acronyms

AIDS  acquired immune deficiency syndrome
ARV/ART  Anti-retroviral (therapy)
CDC  Centers for Disease Control (U.S.A.)
CI  Confidence interval
ELISA  enzyme-linked immunosorbant assay
FHI  Family Health International
GAC  Ghana AIDS Commission
GHS  Ghana Health Services
HAART  highly active anti-retroviral therapy
HIV  human immunodeficiency virus
IEC  Information, education and communication
MOH  Ministry of Health
MTCT  mother-to-child transmission
NACP  National AIDS Control Program
NGO  non-governmental organization
NPV  negative predictive value
OI  opportunistic infection
PCR  polymerase chain reaction
PLWHA  people living with HIV/AIDS
PMTCT  prevention of mother-to-child transmission
PPV  positive predictive value
RA  research assistant
STI / STD  sexually transmitted infection/disease
UNAIDS  Joint United Nations Program on HIV/AIDS
USAID  United States Agency for International Development
VCT  HIV voluntary counseling and testing
WHO  World Health Organization
III. Executive Summary

Background

2.9 million individuals died in 2003 due to HIV; there were 4.8 million new infections and 37.8 million HIV-positive individuals globally.¹ Sub-Saharan Africa continues to be the hardest-hit region of the world with respect to HIV. In Ghana HIV has spread at a slower rate than in other African nations with a prevalence in 2003 of 3%. Prevalence is expected to increase there without effective interventions such as voluntary testing and counseling or VCT.² VCT is offered by a variety of healthcare providers. Its dual objectives are preventing further transmission of HIV and diagnosing HIV-positive individuals enabling treatment, care and support. Standard VCT includes a number of tools and components outlined by UNAIDS and the WHO in published guidelines. These include counseling, confidentiality, informed consent and the HIV test itself.³,⁴,⁵ Additionally, the use and implications of rapid HIV tests in the context of VCT (such as use by non-medical/technical personnel) has been discussed.⁶ The government of Ghana has committed itself to the fight against HIV, issuing a strategic framework and supporting a number of prevention activities, including the promotion of testing and counseling.⁷,⁸ Furthermore, UNAIDS, WHO and others have played a role in the development of Ghana’s national VCT guidelines.⁹

Objectives

This study’s overall objective was to explore and describe HIV voluntary testing and counseling services, including examining the use of HIV rapid tests in that context within the Accra Metro District, Ghana. The specific study objectives are: initially

³ December 2001
explore where voluntary counseling and testing is provided; make an initial nominal, non-qualitative assessment as to whether the following are present and/or undertaken at testing sites: fees, confidentiality and informed consent, pre-, post- and/or ongoing counseling services, links to HIV and HIV-related treatment services, PMTCT services, condom distribution and anonymous testing; determine which HIV testing services are utilizing simple, rapid HIV assays; determine who performs the testing where rapid HIV assays are used; examine the testing algorithms used by testing centers; determine if any guidelines are consulted by testing centers and contrast results to the Ghana’s national guidelines and/or WHO/UNAIDS recommendations for voluntary counseling and testing for HIV.

Methodology
The study was descriptive and used quota sampling (sample size based upon feasibility) of sites potentially offering VCT, including all of the public hospitals/clinics, laboratories and NGOs and a random sample of the private sector sites. Interviews utilizing pre-tested questionnaires were done with two VCT staff (primarily counselors) at each site offering HIV testing and VCT. Direct observations were made to further verify some of the data. Variables measured captured characteristics of testing services based on national guidelines, developed in collaboration with the WHO and UNAIDS. Data was checked and entered into Microsoft Excel v.X and SPSS 11 for analysis.

Results
Study limitations were influenced by biases due to quota sampling, a limited sample size and measurement bias. Within the sample, VCT was provided by NGOs and public and private sector facilities, with NGOs and public sites playing a somewhat greater role. VCT staff was aware of and stated that guidelines were used in a minority of cases (33%). Sites charged a range of fees up to €25 with public sites and NGOs being the least expensive. Options were generally available for individuals who could not afford testing. Regarding confidentiality, testing was always performed out of the site of other staff and clients; 76% of the facilities used a private room for counseling and at almost all sites, staff stated guidance had been given to them regarding HIV and confidentiality. Informed consent forms were used at 21% of the sites and staff at 30% of the facilities stated testing without consent did occur.
Counseling with HIV testing was performed largely by nursing staff within the district and was available at 88% of the facilities. The four sites not offering counseling were laboratories. Pre-test counseling was said to be always offered at 76% of sites; post-test counseling at 85%. Counseling protocols or checklists were utilized at 18% of facilities. Respondents at most sites gave details regarding a referral system. ARV therapy was available on a fee-for-service basis at seven facilities (21.2%). 61% of the VCT sites offered access to treatment options for HIV-related problems. Regarding PMTCT, three facilities existed offering Nevirapine regimens. Counseling on infant feeding differed between the facilities. Condoms were distributed at 49% of the sites and anonymous testing was available at 21%. Regarding testing, 48% used an ELISA or external laboratory, requiring a client’s return to deliver results. Rapid HIV tests used as screening tests in 52% of the cases, enabling same-day results for those testing negative. Two sites performed no confirmatory testing; 61% used a rapid test as a confirmatory test. 35% of the sites utilized two rapid tests, enabling same-day results for both positives and negatives (excepting discrepancies). Rapid tests used all had 100% sensitivities and specificities of at least 97.6%. PPVs were often less than 100%. Testing was performed by a laboratory technologist at all facilities except one, where a counselor performed the testing. A simple index was generated contrasting national guidelines and the aforementioned nominative variables to describe the sample population and showed a relative range of differences amongst the facilities’ compliance to selected indicators

Conclusion
While small sample sizes, quota sampling and measurement bias did limit the study’s ability to generalize results, the study was able to give an initial picture of VCT implementation in a sample population in the Accra Metro district. VCT was available in each sector (public facilities and NGOs; and, to a lesser extent, the private sector) and a rough estimate of utilization (290 test/month) demonstrated a demand for the service. Staff at a minority of sites were aware of VCT guidelines used at their facility. With respect to compliance to selected indicators derived from the recently drafted national guidelines (produced in cooperation with WHO, UNAIDS and others), VCT services in the sample showed a range of differences with facilities from all sectors and of all types complying with many of the guideline’s standards such as offering counseling, confidentiality, informed consent, adequate testing practices. This
suggests that the minimum standards developed are theoretically attainable within the district. However, facilities offering VCT did exist that lacked adequate resources and assurances for VCT provision and its requirements (confidentiality, consent, confirmatory testing for positive screening tests, etc.) and did not meet the established standards. These sites were from public and private sectors and contained both laboratories and hospitals/clinics and no statistically significant generalizations could be made. Further studies with larger sample sizes would be required to obtain more generalizeable results. Additionally, it would be of interest to make more detailed qualitative evaluations of the services surrounding VCT (such as counseling) described in this paper.

IV. Introduction

HIV testing is undertaken within a variety of health providing scenarios and for a number of different reasons. Individuals are tested in settings such as public and private hospitals, clinics and laboratories, as well as at non-governmental organizations, within workplace programs and at mobile outreach clinics.

Furthermore, the reasons for testing vary and range from clinical diagnoses to client-initiated, voluntary testing to learn one’s HIV status to the provision of testing at antenatal care clinics for the prevention of mother-to-child transmission of HIV (PMTCT). Mandatory testing is also undertaken to fulfill requirements for visa and marriage applications and entry into religious orders, the military or for scholarships applications. The Joint United Nations Programme on HIV/AIDS (UNAIDS) has emphasized the key roles that voluntary counseling and testing and PMTCT play in prevention, as well as their effects in facilitating an HIV-positive person’s entry into treatment programs. Furthermore, with the introduction and expansion of the availability of anti-retroviral (ARV) therapy in resource-limited settings, new opportunities of expanding prevention services are arising. An integral aspect of these prevention efforts is the increased access to and availability of VCT

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programs. With respect to HIV testing programs, simple, rapid HIV tests are playing a growing and central role and are a key tool for the implementation of voluntary counseling and testing programs. Their low cost and ease of use have led to widespread use in developing countries. As an integral tool for VCT services, it is of related interest to investigate the extent of these devices’ use, who is using them and how they are being used.

Additionally, UNAIDS and the WHO have both published guidelines on HIV testing and VCT. UNAIDS has a written policy on HIV testing, emphasizing principles of counseling, confidentiality, its voluntary nature and special considerations for women, high risk groups and couples. It stresses the importance of informed consent and quality assurance. Governments are encouraged by UNAIDS to use its policy as a framework for establishing national guidelines for HIV testing. This has been the case in Ghana and both UNAIDS and WHO have played a role in the formulation of the recent national guidelines for voluntary counseling and testing. It is also of interest to examine and contrast the findings in the district with the guidelines and examine whether these correlate with the reality of what is now being practiced. This study offers an initial, baseline perspective of the practice of VCT in the Accra Metro District.

Ghana, a nation in western sub-Saharan Africa with a lower prevalence than other countries in the continent, has not been spared of the HIV pandemic. Its median prevalence is 3.4% translating to 330,000 adults. The government of Ghana has made a commitment to combating the spread of HIV, detailing its plan of action in their “Ghana HIV/AIDS Strategic Framework 2001 – 2005”. Within this national framework, voluntary counseling and testing plays an important role as one preventative aspect within Ghana’s five primary intervention areas. As the Accra Metro District is the national and regional capital with almost two million inhabitants


\[18\] UNAIDS (1997). *Policy on HIV Testing and Counseling*

\[19\] UNAIDS, WHO (2004). *UNAIDS/WHO Policy statement on HIV testing*


and is furthermore one of the districts with the highest national HIV prevalence (4.1%), it is important to look at how these services are delivered here.\textsuperscript{23}

\section{Objectives of the Study}

The overall study objective is to explore and describe HIV voluntary counseling and testing (VCT) services and examine the use of HIV rapid tests in the context of VCT in the Accra Metro District, Ghana.

The specific study objectives are as follows:

\begin{itemize}
  \item Explore where VCT is provided
  \item Determine whether testing centers use any guidelines.
  \item Make an initial nominal, non-qualitative assessment as to whether the following are present and/or undertaken at testing sites: fees, confidentiality and informed consent, pre-, post- and/or ongoing counseling services, links to HIV and HIV-related treatment services, PMTCT services, condom distribution and anonymous testing
  \item Determine which VCT services are utilizing simple, rapid HIV assays
  \item Determine who performs the testing where rapid HIV assays are used
  \item Examine the testing algorithms used by testing sites where VCT is offered
  \item Contrast results to the Ghana’s national guidelines and/or WHO/UNAIDS recommendations for voluntary counseling and testing for HIV.
\end{itemize}

VI. Background

Epidemiology of HIV in Ghana and Accra

Globally, 2.9 million individuals died in 2003 due to HIV and there were 4.8 million new infections, bringing the total number of HIV-positive persons to an estimated 37.8 million worldwide. Sub-Saharan Africa continues to be the hardest-hit region of the world with respect to HIV where there were between 3.0 and 3.4 million new infections in 2003, adding to the 25 to 28.2 million adults and children living with HIV/AIDS in sub-Saharan Africa. An estimated 2.3 million people died due to the AIDS virus there in 2003.24

Ghana is a country located in the western region of sub-Saharan Africa, bordered by Burkina Faso, Cote d’Ivoire, Togo and the Gulf of Guinea. It has an estimated population of 20.4 million.25 The first case of HIV/AIDS in Ghana was diagnosed in March 1986. In that year there were 42 reported cases.26 In 2001, the estimated number of cases of HIV/AIDS in Ghana was 330,000, corresponding to a median prevalence rate of 3.4%.27 In 2004, UNAIDS estimated 350,000 were infected at the end of 2003 with a range from 210,000 to up to 560,000. An estimated thirty thousand deaths resulted from HIV there in 2003.28

West Africa has weathered the AIDS epidemic somewhat better than other regions of Africa such as the South, East and Central areas, where the prevalence rates are particularly severe.29 However, all of the countries in the region which border Ghana, including Cote d’Ivoire, Togo and Burkina Faso, have reported increases in the number of cases of HIV with corresponding prevalence rates of 9.7, 6.0 and 6.5%, respectively.30 Although HIV has spread more slowly in Ghana than other African nations, there was an increase in prevalence between 1994 and 2001 from 2.7% to 3.0%.31 Although the future trend of this rate is not certain, extrapolation of previous rates has given a range of possible HIV prevalence rates of between 3.6

29 Ibid.
30 Ibid.
and 6.9% by 2009.\textsuperscript{32} The 2002 sentinel survey estimates that 550,000 people may be living in Ghana by the end of 2004.\textsuperscript{33} Additionally, differences in infection rates exist amongst the geographic regions within Ghana, with the southern parts of the country having the highest rates. In 2000, the northern areas had a prevalence of 1.4%, the middle 2.6% and the south (which includes the area with the highest HIV prevalence known as the Eastern Region), 3.6%. The median prevalence was 2.3%. The Greater Accra area had a rate of 3.1% (up from 0.7% in 1992) in that year.\textsuperscript{34} The 2002 sentinel surveillance data for Ghana showed mean prevalence in the northern area as 3.0%, the middle at 3.6% and the south at 4.5%. Notably, Greater Accra had an HIV prevalence of 4.1%, an increase by 1% from the 2000 data. The prevalence ranged within Ghana from 1.6% (in Nalerigu in the Northern Region) to 8.5% (in Koforidua in the Eastern Region) with a median rate of 3.4%.\textsuperscript{35} These statistics confirm a trend of steady increase in HIV prevalence nation-wide. Additionally, there are higher prevalence rates associated with high risk population sub-groups in Ghana, particularly in Accra. In 1997, 30% of female STD clinic patients and 77% of commercial sex workers in the city of Accra were HIV positive. In 1998, STD patients in Kumasi had a 6.3% positive rate versus 28.1% in Accra.\textsuperscript{36}

The primary mode of transmission is through heterosexual intercourse and HIV-1 is the predominant type of HIV virus causing 92.2% of the infections. 7.4% of infections are dual HIV-1/HIV-2 infections. 0.4% of the infections are pure HIV-2 infections.\textsuperscript{37} Ninety percent of HIV-infected persons are between the ages of 15 and 49, therefore directly affecting the most economically productive sector of the population.\textsuperscript{38} Females are considered more vulnerable to HIV infection and as of 2000, two-thirds of the reported cases have been female.\textsuperscript{39}

\textsuperscript{32} Ibid.
\textsuperscript{34} Ibid.
\textsuperscript{36} The Measure Project and the Ghana AIDS Commission (2003). \textit{AIDS in Africa during the Nineties: Ghana}.
\textsuperscript{37} Ibid.
\textsuperscript{39} Ibid.
Economic Impacts of HIV in Ghana

As in many countries with a high prevalence of HIV, the disease has had a significant economic impact on the country and its population at both a societal and individual level. Ghana is classified as a low-income country with a GDP per capita in 2002 of US $1964. Although this is relatively high for sub-Saharan African countries, 44.8% of the population lives below $1 per day. Subsistence agriculture comprises 36% of the gross domestic product and accounts for 60% of the country’s workforce.

The HIV epidemic’s potential impact on Ghana’s economy is considerable. There are three primary ways by which disease hinders economic well-being: a reduction in life-expectancy resulting in both early death and chronic disability, a reduction in parental investment in children and, lastly, the overall negative effects on returns on investments in business and infrastructure. Some of these outcomes can be seen in Ghana where the negative economic and societal effects of HIV run across multiple sectors including both public and private labor, the healthcare system, education and agriculture. One study found that in Ghana, the two major economic effects of HIV are loss of labor and increased costs. In other words, there will be fewer adults in their productive years, affecting output as well as increased direct and indirect costs to bear by families and society such as medical and funeral expenses, loss of time due to illness, retraining costs and care for orphans. By 2014, projecting present infection rates, Ghana’s population will be reduced by 1.2 million people (from 25 million to 23.8 million). The majority of these will be among people in their most productive ages between 15 and 49 years of age. Without intervention, HIV prevalence is likely to increase, leading to increased morbidity and mortality as a result of AIDS. These lives impaired or lost will contribute significantly to adverse socioeconomic effects throughout the country. At a prevalence rate of 3.6%, the impact of AIDS is likely to be felt at a household level through increased

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43 CIA (2003), World Factbook
45 Ibid.
47 Ibid.
expenses, reduced savings and changes in productivity patterns and within the health sector through an increased burden on resources.\textsuperscript{48} To counter the epidemic, it is estimated that the annual cost of scaling up AIDS programs to meet current needs is between US$3-4 per capita or 1.26\% of the GDP.\textsuperscript{49}

\textit{HIV Awareness in Ghana}

Several studies have assessed HIV awareness of populations within Ghana. One nation-wide study assessed behavioral trends in female sex workers, miners, police, and male and female youth in four study sites (including one within the Accra Metro District) in Ghana in 2000. The results concluded that knowledge of HIV prevention methods was “low”, with between 70-80\% of participants able to cite “use condoms correctly with all sex partners” as a means of HIV prevention. Additionally, false beliefs in HIV transmission modes continued in 15-25\% of the respondents. Two-thirds of women respondents, aged 18-22 years, “had made their sexual debut" and 40\% had used a condom at last sexual contact. 48\% of male youth, aged 20-24 years, were sexually active in the past half year and although awareness of condoms was high (91\%), about half (53\%) had “reported using a condom at last sex with a non-regular partner”\textsuperscript{50}. Another study of Ghanaian youth, aged 12-24 years, undertaken in 2000 somewhat corroborated this evidence, citing “misconceptions were evident...with one in five males and one in six females [who] thought HIV/AIDS was a myth.” and that “most youth felt little perceived risk of getting HIV/AIDS” with about 50\% of those who had ever had sex stating they were “definitely not at risk for HIV/AIDS infection”. On the other hand, the study also concluded that “youth knew what could be done to protect one’s self from contracting HIV” with most (80-97\%) mentioning condom use and about half stating abstinence. The study found “the highest level of awareness of the protective role of condoms...was reported by males in Greater Accra (92\%)”.\textsuperscript{51} Another survey undertaken in central Ga Mashie and Ablekuma districts of Accra of 129 adults found similar results with over 95\% of the

participants having heard of AIDS and 51% of men and 42% of women who felt they were at risk of infection. 72% stated they would be willing to take an HIV test, but 30% did not know where they could be tested. Of the 25% (n=25) unwilling to test, the following reasons were given: fear, “not before I am sick”, cost, “don’t want to die early”, “don’t want to know”, “I am always healthy” and “I have my own medicine”. It should be noted the preceding study undertaken in 2003 did not specify sampling methodology, so generalizability cannot be assumed. Another study found that “long-held socio-cultural beliefs, attitudes, and practices in Ghana” contribute to higher risk behavior. The study sites one example whereby 80% of the people know how HIV is transmitted, but most people still practice risky sex behavior. One can conclude from the aforementioned results that although there is a relatively high level of overall awareness of HIV/AIDS, there are also underestimations of the risks of transmission and a significant degree of misconceptions.

**Government of Ghana’s Response to the HIV Epidemic**

In light of the aforementioned impacts and realities of Ghana’s HIV situation, the Government of Ghana has committed itself to the fight against HIV. In 1987, the National AIDS/STI Control Program was established by the Government of Ghana and the Ministry of Health to coordinate the national response, treating HIV initially as a medical problem. The Ghana AIDS Commission (GAC) was later established in September 2000 under the office of the President of Ghana to coordinate all HIV/AIDS-related activities within the country in an expanded, multi-sectored response to the epidemic. The GAC has issued the *Ghana HIV/AIDS Strategic Framework 2001-2005* whose stated goal is to “prevent and mitigate the socioeconomic impact of HIV/AIDS on individuals, communities and the nation”. The framework covers five specific intervention areas:

- The prevention of new transmissions of HIV
- Care and support for people living with HIV/AIDS
- Creating an enabling environment for the national response
- Decentralized implementation and institutional arrangements

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• Research, monitoring and evaluation
Within the first intervention point, a number of prevention activities are supported, including the promotion of safer sex among vulnerable groups, sexually transmitted disease (STD) management, minimizing the risk of transmission through blood and blood products, reduction and prevention of mother-to-child transmission (PMTCT) and the promotion of voluntary counseling and testing (VCT). HIV testing and VCT more specifically constitute a critical and central component of Ghana’s HIV prevention efforts.

An Overview of the Accra Metro Health District
The Accra Metro District is one of five districts within the Greater Accra Region which lies on Ghana’s southern border along the coast of the Gulf of Guinea. It encompasses the national capital of Accra covering an area of 144 km² and containing a population of 1,807,000 people, or 70% of the population of Greater Accra. 40% of the district’s population is between the ages of 15 and 49 years. The district is bounded by the Gulf of Guinea to the south and two other districts: Ga to the North and West and the Tema Municipal Area to the east. The Accra Metro district is comprised of six sub-districts and contains a relatively high number of health facilities. Table 1 gives some specific details regarding the health sector within each of the sub-districts.

With respect to HIV cases officially reported to the Metro Directorate, the report stated there were 351 cases reported in 2003, 321 in 2002 and 355 in 2001. Another estimate from the same office indicated somewhat larger figures at 425 HIV infections reported in 2002, 446 in 2001 and 384 in 2000.

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57 Ibid.
Table 1: Overview of Accra Metro Sub-Districts\textsuperscript{59,60}

Note: Table excludes dental clinics, eye clinics and maternity homes where the ministry of health stated and it was assumed no HIV testing took place. “Public” includes so-called “quasi-governmental” facilities, such as military and police hospitals.

<table>
<thead>
<tr>
<th>Sub-district</th>
<th>Population</th>
<th>Public Hospitals And Clinics</th>
<th>Public Laboratories</th>
<th>Private Hospitals and Clinics</th>
<th>Private Laboratories</th>
<th>Total by Sub-district</th>
</tr>
</thead>
<tbody>
<tr>
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<td>5</td>
<td>1</td>
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<td>28</td>
</tr>
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<td>5</td>
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<td>2</td>
<td>208</td>
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Source: Accra Metro Health Directorate, 2002

\textsuperscript{59} Accra Metro Health Directorate (Ghana Health Services / Ministry of Health)

\textsuperscript{60} Public Health Reference Laboratory, Ghana Health Services
VII. Literature Review

Definitions

Confidentiality: “refers to a client’s right to expect that healthcare professionals will not disclose personal health information without consent”\(^6\) and that those “with a direct role in the management of patients or clients should have access to such records or information, and only on a ‘need-to-know’ basis”.\(^6\)

Diagnostic HIV testing: HIV testing undertaken for the purposes of clinical diagnosis by or on the recommendation of a medical doctor. This is also referred to as provider-initiated HIV testing. For the purposes of this study, this is contrasted with voluntary testing in the context of VCT, although technically diagnostic testing may (and should) also be considered voluntary if informed consent is given. Also, within the scope of this study, preventative testing is also included in this group (as in testing for PMTCT).\(^6\)

ELISA: an enzyme-linked immunosorbant assay is a type of antibody test generally requiring specialized laboratory equipment, trained personnel and more than 2 hours to perform. This type of assay is most suitable for large volume testing of more than 40 samples per testing tray.\(^6\)

HIV counseling: “a confidential dialogue between a person and a care provider aimed at enabling the person to cope with stress and personal decisions related to HIV/AIDS. The counseling process includes an evaluation of personal risk of HIV transmission and facilitation of preventive behavior.”\(^6\) The objectives of HIV counseling are the prevention of HIV transmission, support for those considering testing, both in deciding to take the test and in dealing with testing outcomes. Within the context of VCT, this may be divided into pre-test and post-test counseling. Additional forms of counseling include (but are not limited to) ongoing counseling (for HIV-positive

\(^6\) WHO (2004). Rapid HIV tests: guidelines for use in HIV testing and counseling services in resource-constrained settings
\(^6\) WHO (2004). Rapid HIV tests: guidelines for use in HIV testing and counseling services in resource-constrained settings
\(^6\) WHO (1994). Counselling for HIV/AIDS: A key to caring. For policy makers, planners and implementers of counselling activities
persons), partner counseling (can also include family or friends) and counseling without testing.66

**HIV counselor**: The individual providing HIV counseling. This person can come from a variety of backgrounds and include nurses, doctors, social workers, psychologists, religious workers, persons living with HIV/AIDS, volunteers, etc. HIV counselors should be trained in HIV counseling methods.

**HIV-negative**: 1. the state or condition of not being infected with HIV; 2. the absence of HIV antigen-specific antibodies

**HIV-positive**: 1. the state or condition of being infected with HIV; 2. the presence of HIV antigen-specific antibodies

**HIV antibody (Ab) test**: a device used for detecting antibodies to HIV. Depending on the tests, different samples can generally be used: whole blood, serum and plasma as well as oral fluids and urine. The most common antibody tests are ELISAs and simple, rapid tests.

**HIV rapid test (or simple, rapid test)**:68, 69 One type of HIV-antibody test. Most rapid devices require no extra reagents, minimal additional equipment and produce a result in under one hour (many within a few minutes). Three formats exist and are described below. Simple, rapid tests are simple tests (tests requiring more expertise and equipment than rapid tests) performed in under 30 minutes.

**HIV screening test**:70 also known as an initial test; a test for HIV-antibodies, generally recommended to have high sensitivity to minimize the risk of false negatives. Often consists of an ELISA or a simple, rapid test.

**HIV confirmation test**:71 also known as a supplemental test and includes second confirmatory or “tie-breaker” tests; an HIV-antibody test (such as an ELISA, Western Blot or rapid test) or an HIV test which detects the virus directly (such as PCR) used to verify a positive or ambiguous result of an HIV screening test.

**Informed consent**:72 With respect to HIV testing, acknowledgement of the person to be tested that he or she has been informed of and understands the benefits and risks of

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67 Ibid.
69 WHO (2004). *Rapid HIV tests: guidelines for use in HIV testing and counseling services in resource-constrained settings*
71 Ibid.
being tested and agrees to take the test. Informed consent may be given in writing or verbally.

**Mandatory HIV testing**\(^{73}\): Testing required for purposes such as receiving visas, scholarships, marriage licenses, membership in religious groups, etc.

“Tie-breaker” test\(^{74}\): A second confirmation test or third assay in the WHO-recommended strategy for detecting asymptomatic infections in populations with a prevalence of <10%.

**Voluntary HIV testing**: In a broad sense, HIV testing done once informed consent has been given and testing is the choice of the individual. In this study, voluntary testing refers to testing within the context of VCT where HIV testing is largely client-initiated (as compared to diagnostic or mandatory testing).\(^{75}\)

**HIV Testing and Testing Contexts**

The World Health Organization defines HIV testing as “the process by which blood or body fluids are analyzed for the presence of antibodies or antigens produced in response to HIV”.\(^{76}\) The process of HIV testing allows individuals to learn their HIV serostatus. This has a number of impacts on an individual and societal level. It allows an individual to initiate or continue behaviors that prevent one from becoming infected or, in the case of an HIV-positive person, from infecting others. It also facilitates a person’s access to HIV-specific treatment, care and support (including PMTCT and the prevention of the infection of infants), allows one to better cope with the infection and lets him or her plan for the future. On a community level, testing helps to minimize stigma, denial and discrimination and mobilize support.\(^{77}\)

A number of recommendations regarding HIV testing have been made by the WHO in the Weekly Epidemiological Review (WHO, 1997). The strategy and algorithm chosen should depend upon three factors: the objective of the test, the performance (sensitivity and specificity) of the test to be used and the HIV prevalence in the population that’s to be tested. Furthermore, they divide the objectives into


\(^{75}\) UNAIDS and WHO (2004). UNAIDS/WHO policy statement on HIV testing. June 2004


\(^{77}\) WHO (2002). Increasing access to HIV testing and counseling. November 2002
transfusion/transplant safety, surveillance and diagnosis. The paper describes a minimum standard for sensitivity of >99% and specificity of >95% for HIV tests. Sensitivity has been defined as a test’s ability to correctly identify samples with HIV antibodies and specificity as the ability to correctly identify samples that do not contain HIV antibodies. A test with high sensitivity will have few false negatives while a test with high specificity will have few false positives. Furthermore, the prevalence of HIV has a direct affect on a test’s ability to detect those truly infected or not infected. With a higher prevalence within a population, there is a greater possibility that a person who tests positive actually has the disease. This is the positive predictive value (PPV). Alternately, the probability that an individual testing negative is not infected decreases as prevalence increases. This is the negative predictive value (NPV).

De Cock et al. outlined four possible contexts for HIV testing: diagnostic testing for specific healthcare interventions, mandatory testing, routine HIV testing for preventive healthcare (such as in PMTCT interventions or at an STI clinic; for this study, preventive HIV testing has been paired with diagnostic testing) and voluntary testing and counseling. UNAIDS and the WHO have established similar categories. However, the routine offer of HIV testing by healthcare providers is distinguished from routine HIV testing. Also, mandatory screening of samples for HIV is distinguished from mandatory testing of individuals. With respect to diagnostic testing, UNAIDS states that it should be undertaken “whenever a person shows signs or symptoms that are consistent with HIV-related disease”. De Cock argues that diagnostic HIV testing is often not undertaken in African settings for a variety of reasons including costs, logistics, the burden of counseling, a belief in a lack of treatment options, adverse effects on the patient and a disinclination of healthcare workers to address HIV/AIDS. HIV, therefore, often progresses without a formal diagnosis. The authors propose that diagnostic HIV testing will have to be

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83 Ibid.
incorporated into standard medical practice to further the benefits available from both the treatment of opportunistic infections associated with HIV and anti-retroviral therapy as it becomes increasingly available. On the other hand, mandatory HIV testing may be performed for a number of reasons beyond the accepted mandatory screening of blood, semen and organs used for donations. Examples include testing for visa and marriage applications, for entry into religious orders and the military or for scholarship applications. The distinction between screening and testing of individuals is important. UNAIDS and WHO support screening for all blood, blood products, fluids and tissues intended for transfer, but do not support mandatory testing of individuals for both ethical reasons and because it is not seen as an effective prevention intervention. Testing for prevention healthcare is well illustrated in the setting of the prevention of mother-to-child transmission of HIV where testing is necessary to determine the sero-status of the mother before interventions for preventing the infection of the infant such as short-course anti-retroviral therapy can be implemented. This context of testing has been further defined by UNAIDS as the “routine offer of HIV testing by health care providers” that should be extended to all patients seen either in an STI clinic, in the context of pregnancy and/or to all asymptomatic patients seen where HIV is prevalent and ARV therapy is available. Voluntary counseling and testing has been defined by UNAIDS as “the process by which an individual undergoes counseling to enable him or her to make an informed choice about being tested for HIV” and that “this decision must be entirely the choice of the individual and he or she must be assured that the process will be confidential”. This context of testing is generally thought of as client-initiated and is critical to effective HIV prevention.

**HIV Rapid Testing**

The use of rapid tests for HIV testing has several implications. Their ease-of-use, low cost and high specificity and sensitivity have led to their widespread use in developing countries and resource-poor settings. Results are obtained and able to be given within minutes and, due to their simplicity, use by non-medical/laboratory staff

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84 Ibid.
85 WHO (2002). *Increasing access to HIV testing and counseling*. November 2002
87 UNAIDS (2002). *HIV voluntary counseling and testing: a gateway to prevention and care*
such as counselors is possible. There are public health advantages that include an increased number of people able to be tested, an increased return rate where clients or patients receive the results of their test, decreased waiting time for the client/patient for his or her results and there is less dependence on laboratory services for getting results.\textsuperscript{88,89,90,91} Additionally, the significance of effective counseling in centers where rapid tests are used as clients may have less time to prepare for the results has been emphasized.\textsuperscript{92} The WHO has recommend “wherever possible, the use of rapid tests should be an important component in the expansion of testing and counseling services”, but also cautions that they can “also lead to people being tested without adequate counseling and informed consent”.\textsuperscript{93,94} In 2000, the Centers for Disease Control evaluated 28 rapid HIV tests.\textsuperscript{95} In 2002, the WHO published results on the evaluations of seven rapid assays and three non-ELISA saliva assays.\textsuperscript{96,97} These evaluations showed a range of quantitative and qualitative differences. Under ideal circumstances, screening assays should be highly sensitive in order to detect all truly HIV-positive samples, while confirmation tests should provide high specificity to determine which of those individuals screened antibody positive are not actually infected with the human immunodeficiency virus.\textsuperscript{98} For diagnosis in patients with no clinical symptoms in a country with HIV prevalence under 10%, the WHO and UNAIDS recommend using three different assays for screening, confirmation and, if necessary, a third “tie-breaker” test.\textsuperscript{99} As a caveat, Dr. Bernard Branson of the CDC argues, “test sensitivity and specificity alone are not

\textsuperscript{88} UNAIDS (2001). \textit{The impact of voluntary counseling and testing}. June 2001
\textsuperscript{91} WHO (2004). \textit{Rapid HIV tests: guidelines for use in HIV testing and counseling services in resource-constrained settings}
\textsuperscript{93} World Health Organization (2003). \textit{The Right to Know: New Approaches to HIV Testing and Counselling}
\textsuperscript{94} WHO (2004). \textit{Rapid HIV tests: guidelines for use in HIV testing and counseling services in resource-constrained settings}
\textsuperscript{95} Branson, B. \textit{Rapid Tests for HIV Antibody}. \textit{AIDS Reviews} 2000; 2: 76-83
\textsuperscript{98} Miksch, S (2002). \textit{Laboratory Under Minimal Conditions}. Medical Mission Institute Würzburg,
sufficient to establish optimal paradigms for HIV screening” and “both logistics and economics pose challenges to accomplishing the main objectives of HIV antibody testing.” 100 He concludes with an example: in a resource-poor setting, one HIV screening test may be appropriate if the alternative is no HIV testing. Given a range of possibilities in the use of rapid HIV tests by different agencies, it is of interest to look at the actual context of the testing with these devices. For symptomatic and asymptomatic diagnosis in countries with relatively low HIV prevalence (≤10%), the CDC recommendation is to utilize 2 or 3 rapid assays in series, respectively.101

With the use of rapid tests, possible HIV testing protocols include serial and parallel testing. Serial testing involves an initial test with a rapid test. If positive, a second, different rapid test is performed. If the results from these two tests differ, a third and different tie-breaker test must be undertaken. This is the recommended algorithm promoted by both the WHO and CDC, although the recommendations were based on test systems using serum or plasma.102,103 Serial testing has advantages in that it is the more cost-effective algorithm (although the extent of cost-effectiveness depends upon the HIV prevalence). However, there is a longer waiting time for those individuals testing positive and this offers a potential for stigmatization if positively screened clients must be called back for a second finger-prick to obtain a sample for confirmation testing. This can be avoided by taking enough blood to perform both tests, although venupuncture may not be as suitable as finger-pricks under field conditions such as outreach clinics or in remote areas. Parallel testing is performed with two tests performed simultaneously. If the test results are discordant, then a third “tie-breaker” test is performed. This has some advantages in requiring only one finger-prick to perform both tests. There is also then confirmation testing for each negative sample. Additionally, clients may perceive two tests as being more accurate than a single assay, thus potentially increasing the trust in VCT centers. Waiting times may also be shortened which would benefit the client. Studies have found no significant difference in accuracy between parallel and serial testing.104

101 Ibid.
**Rapid HIV Assay Formats**

There are a number of different types of simple, rapid HIV assays. Rapid assays have been developed which utilize whole blood, serum and/or plasma, as well as urine and saliva. Urine and saliva assays are, at present, uncommon in Ghana as they have yet to be evaluated and approved by the NACP and its collaborating partners.\(^{105}\) With respect to the whole blood rapid assays (which usually function with serum and plasma as well), a number of advantages are shared. The assays involve a limited number of steps, most generally include all the necessary reagents and equipment and they require only one or a few steps, thus minimizing the risks of error in performing them. The results are usually clear and internal controls ensure the test is performed correctly, validating the result. Results are usually obtained within a few minutes. With respect to accuracy, the WHO states the results “depend not only on the intrinsic quality of the test itself but also on extrinsic qualities such as the skills of the performer and the application of rigorous standards by the laboratory performing the test”. WHO evaluations have determined that the results produced by simple, rapid assays in the field are “as accurate or more accurate...than ELISAs”.\(^{106}\) However, rapid tests “may detect seroconversion samples on average a few days later than the most sensitive ELISAs” which may be of importance in areas with a high HIV prevalence.\(^{107}\)

**Immunofiltration**

Also known as a *flow-through* or *membrane immunoconcentration* devices, these devices incorporate HIV antigens (generally recombinant proteins based on the HIV envelope) placed on a permeable membrane. The sample flows through the membrane and into an absorbent pad. Antibodies bind to the corresponding antigens

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107 Ibid.
for HIV and/or the control. A signal reagent, usually a colloidal gold, is then added. In negative cases, only the control dot or line (if present) is visible. Where a control dot is included, an invalid test is indicated by the absence of the control dot. In HIV-positive cases, in addition to the control dot, one or two dots will form corresponding to the HIV antigen(s). HIV-1 and HIV-2 differentiation may possible with this type of assay when distinct antigens are place separately on the membrane.\(^{108,109}\) This type of assay generally requires reagent preparation and has multiple steps and therefore may necessitate some specialized training.\(^{110}\)

**Figure 3: Immunochromatographic Rapid Assay**

![Immunochromatographic Rapid Assay](source)

**Figure 4: Agglutination rapid test**

![Agglutination Device](source)

**Immunochromatographic**

With immunochromatographic devices, also known as lateral flow devices, the signal reagent is contained within the base of a nitrocellulose strip on which the HIV antigen is placed along with a control strip. HIV antigen placement may include and/or differentiate between HIV-1 and 2. The sample is introduced at the base of the strip where it combines with the signal reagent and migrates through the nitrocellulose. A colored band will form at the corresponding antigen lines indicating the result: control, HIV-1, HIV-2, etc.\(^{111}\) This is generally one of the simplest rapid tests to perform, requiring the least amount of training, with “little or no laboratory experience required”.\(^{112}\)

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Agglutination

The agglutination device consists of a plastic labyrinthine chamber through which a sample flows after being placed in the sample well. The red blood cells agglutinate when an antibody-antigen reagent detects HIV antibodies. The result is read visually. Of the three rapid test devices, the agglutination device was judged by the WHO as the most complex and requires the most training and “specific skills such as interpreting agglutination patterns”.

Voluntary Counseling and Testing

In the United Nations General Assembly Declaration of Commitment on HIV/AIDS, HIV prevention is a central component. The statement calls for expanded access to voluntary counseling and testing by 2005. VCT is considered one of the nine established prevention strategies, which also includes blood donation screening, the use of mass media, AIDS education in schools, social marketing of condoms, treatment of sexually transmitted infections, peer education for commercial sex workers, prevention activities for intravenous drug users and the prevention of mother-to-child transmission of HIV. The WHO has recently stated that “people have a right to know their HIV status, and testing and counseling should be widely accessible” and, importantly, it is an entry point for services related to HIV, additionally reducing the risks of infection and transmission, and that “high priority should be given to scaling-up HIV testing and counseling to maximize the opportunities to reach those with HIV infection or at high risk”.

Unfortunately, specific data regarding VCT demand in Ghana and Accra could not be found. In 2003, it was estimated that of 30 African countries (of which Ghana was...
included), coverage of VCT was 0.7%. Although it was acknowledged that coverage of 100% would never be reached, as not everyone would be tested in a given year, 12-14% coverage should be reached if every person was tested every 7 or 8 years. This study did not take diagnostic and preventative testing into account, so the actual annual need for VCT would be “considerably less”. It is estimated that by 2005, there will be an annual need of up to 180 million individuals needing HIV testing and counseling. In light of this, UNAIDS details a number of challenges facing the expansion of VCT services: limited access to VCT due to costs, limited infrastructure and a shortage of trained staff, improving the effectiveness of VCT, “overcoming barriers to testing”, “publicizing the benefits of VCT” and an awareness of the needs of specific client groups.

VCT is a service which can be offered and accessed at sites provided by the governmental / public sector, non-governmental organizations and the private sector. Settings can include freestanding VCT sites, integration into hospitals and through organizations. An increased role may also be seen in the private sector due to the presence and use of simple, rapid HIV tests. Regarding this point, UNAIDS has also written that “the monitoring and evaluation of VCT services in the private sector presents additional challenges”.

UNAIDS describes five goals of voluntary counseling and testing: the prevention of HIV transmission and acquisition, early and appropriate uptake of services, societal benefits and counseling for adherence. Prevention of HIV infection includes both the prevention of transmission from HIV-positive to HIV-negative partners as well as the prevention of mother-to-child transmission. Prevention of HIV acquisition includes the prevention of HIV-negative individuals from acquiring the virus from HIV-positive or untested partners. Early and appropriate uptake of services targeting HIV-positive persons includes access to medical care (such as treatment of opportunistic infections or ARV therapy), family planning,

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121 Ibid.
124 Ibid.
emotional care, counseling for positive living, social support, improved coping and planning for the future and legal advice. For those HIV-negative, it includes emotional care, family planning and planning for the future. **Societal benefits** include the normalization of HIV, decreasing stigma, improving awareness and the support of human rights. Lastly, **counseling for adherence** seeks to ensure adherence to ARV and other therapies (where available), enhance the ability to cope with side effects and offer counseling regarding adherence in PMTCT interventions.\(^\text{126}\) In a slightly different manner, Family Health International and USAID state the rationale behind VCT thusly: a demand for VCT exists; it is an entry point to other HIV/AIDS services; there are benefits for both those who test positive and negative and VCT “offers a holistic approach that can address HIV in the broader context of people’s lives.”\(^\text{127}\) As the availability of treatment increases, it is expected that the demand for VCT services will also increase. This has been observed in the Khayelitsha township in Cape Town, South Africa, where there has been a twelve-fold increase in testing uptake between 1998 and 2002. Access to ARV therapy, which began there in 2001, is seen as one critical factor in this increased uptake along with a comprehensive approach to AIDS care.\(^\text{128}\) At present, it is estimated that only five percent of HIV-infected persons in sub-Saharan Africa are aware of their HIV status.\(^\text{129, 130}\)

VCT has been shown to be effective. A large randomized trial undertaken at three sites in Kenya, Tanzania and Trinidad of 3120 individuals and 586 couples showed an overall reduction in the proportion of individuals and couples engaging in unprotected intercourse of those receiving VCT when compared with those receiving health information only. Additionally, the study found that HIV-positive individuals reduced unprotected sex to a greater degree than those testing negative and couples receiving VCT together reduced unprotected sex more than individuals participating alone.\(^\text{131}\)

\(^{126}\) *Ibid.*  
\(^{127}\) FHI. (2001). *Voluntary counseling and testing for HIV*. FHI, IMPACT and USAID. June 2001  
However, the discussion on the effectiveness of VCT has not been without controversy. De Zoysa et al (1995) reviewed 50 studies that showed mixed results with respect to behavior change.\textsuperscript{132} As mentioned previously, results associated with couples attending VCT services have shown the intervention to be more effective than interventions targeting individuals.\textsuperscript{133,134} Studies in Rwanda, Zaire and Uganda have shown overall increases in condom use following testing and counseling. One meta-analysis conducted in 2000 surveying 34 published studies covering 18 developing countries found a number of varied results obtained primarily from nine prospective cohort studies with regard to VCT effectiveness. Five of these studies showed an overall increased and sustained condom use among participants. Four of the studies found a “modest or negligible impact of VCT on condom use rates and subsequent pregnancy rates”.\textsuperscript{135} However, although studies suggest VCT is effective, the relationship between VCT and HIV transmission is complex.\textsuperscript{136} One strategy suggested for increasing the effectiveness of VCT is the utilization of rapid HIV tests instead of the widely used ELISA which would offer individuals results relatively quickly, if not on the same day.\textsuperscript{137}

Furthermore, barriers to HIV testing and VCT do exist. UNAIDS has outlined aspects of these barriers including stigmatization and social rejection of those testing positive, as well as gender inequalities which could lead to the abuse of women and discrimination. Vermond and Wilson also describe the following barriers to HIV testing: fear of adverse consequences, lack of expectation of benefit, no perception of HIV risk, cultural norms that are opposed or hostile to testing, unavailability of the HIV test, absence of guarantees of confidentiality, cost, inconvenience (lack of same-day testing), personal isolation and a lack of provisions for testing couples or social


\textsuperscript{133} Ibid.


They also propose possible interventions to circumvent these barriers: offer routine, cheap, convenient testing, offer testing as a standard public health intervention, offer testing of couples with social support, offer testing in combination with other services, encourage social norms to shift towards acceptance and support of those testing positive and ensuring privacy and confidentiality.

Literature has also been published which has shown VCT to be highly cost-effective. One study’s results suggested an estimated 1999 HIV-1 infections averted in Kenya and Tanzania over a one year period between 1995 and 1998. “The cost per HIV-1 infection averted was US$249 and $346, respectively, and the cost per DALY saved was $12.77 and $17.78.”. Another VCT intervention in Lusaka, Zambia provided pre and post-test counseling and same-day testing utilizing two rapid tests over a period of one year (1995-1996) estimated the cost per HIV infection averted at US$84.

As previously mentioned, there are a number of models of VCT delivery service, each with their own benefits and possible problems. FHI has described six such models: stand-alone, integrated, NGO, private sector, public sector/NGO partnership and mobile outreach. Stand-alone (or direct or free-standing) sites are not connected to a medical institution and generally have a dedicated staff for providing VCT. These sites offer some advantages in that they tend to have high coverage and quality and are utilized by men and young people who do not normally access VCT services at medical facilities. They have better accessibility through accommodating opening hours and sufficient staff and offer support for PLWHAs through post-test clubs and linkages to support groups. Stand-alone sites also have a number of potential pitfalls. They are not generally associated with a medical institution and the infrastructure it could provide. Follow-up can be more difficult. The costs to establish and operate are high and usually require long-term external support. Lastly, their geographical accessibility is limited and there is a potential for

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138 Vermund S, Wilson C (2002). Barriers to HIV testing – where next?. Lancet . 360;1186-87; October 19, 2002
140 McKenna, S L; Muyinda, G K; Roth, D; Mwali, M; Ng'an'du, N; Myrick, A; Luo, C; Priddy, F H; Hall, V M; von Lieven, A A; Sabatino, J R; Mark, K; Allen, S A (2001). Rapid HIV testing and counseling for voluntary testing centers in Africa. AIDS Care; 5:665-72. Oct. 15, 2003
141 FHI (2001). Models of HIV voluntary counseling and testing service delivery. FHI, IMPACT and USAID. June 2001
stigmatization as they are directly associated with HIV. Integrated model sites are generally part of another healthcare providing facility such as a hospital, clinic or antenatal care center. These are advantageous in that they promote VCT in terms of general health, decreasing the marginalization of the disease. Health care workers are directly involved in HIV prevention activities, direct referrals can be made and more services can be provided than at stand-alone sites. There is also a high volume of clients who visit the facilities, potentially increasing the uptake of the service. Disadvantages can include an overall decrease in the quality of both VCT and other services due to a lack of sufficient staff, low motivation in public sector employees, difficulties in enforcing quality assurance measures and a limited capacity to manage and administrate complex services, as well as extended waiting times, inconvenient opening hours and possible negative client perceptions of services. In the NGO model, the VCT services are integrated into other ongoing activities or the organization provides VCT as its only activity. These sites have the advantage of better management through specialization, a high capacity to maintain privacy and confidentiality, adaptable opening times and an influence on waiting times and a greater ability to ensure quality. Problematic aspects could be the dependence upon donor assistance, a limited ability to scale up, stigma associations with the facility and a diversion away from the organizations core activities. The private sector model of VCT occurs within private health care facilities, also known as private providers. FHI cites benefits that include a commitment to higher quality care that can respond to the needs of individual clients. The facilities are also perceived to be private and confidential. Other studies have contradicted some of these beneficial perspectives, finding “private providers” “largely unregulated” with “serious deficiencies in technical quality”. However, they are often perceived by users as being “more attractive”. Additional challenges include the inaccessibility to the poor and uninsured, a lack of government regulation and the fact that time-intensive counseling does not fit well into the model. The mobile/outreach model offers a capacity to offer VCT services to “hard to reach” populations and rural communities.

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142 Ibid.
143 Ibid.
The challenges with this model include expense, difficulties keeping testing confidential and offering follow-up care and a limited capacity.\textsuperscript{145}

There are also a number of essential elements of VCT described by UNAIDS and the WHO and also reflected in the national guidelines (see below).\textsuperscript{146,147,148} These include informed and voluntary consent, confidentiality and pre- and post-test counseling, also known as the “three C’s” of HIV testing.\textsuperscript{149} Due to the impact of the result on the individual undergoing testing, including stigmatization and other negative outcomes in many communities, the voluntary nature of the testing is a critical prerequisite to informed consent. The WHO outlines three critical components of informed consent: “pre-test information on the purpose of testing and the treatment and support available following the result, ensuring understanding and respecting the individual’s autonomy”.\textsuperscript{150} One study in South Africa amongst peri-natal clinic attendees found that clients were informed, but felt compelled to test and thus the testing was therefore not entirely voluntary.\textsuperscript{151} Sastry \textit{et al.} concluded from a study in India that “simple didactic group education on HIV/AIDS and testing issues is not sufficient to help women in this setting to understand the complexities of informed consent for HIV testing”.\textsuperscript{152} These studies suggest the complexity surrounding informed consent and the HIV testing process. Confidentiality is also of utmost importance also for reasons of stigmatization, discrimination and other negative outcomes for those testing positive. The WHO states “only healthcare professionals with a direct role in the management of patients should have access to such records …on a ‘need-to-know’ basis”.\textsuperscript{153} Additionally, confidentiality facilitates an honest client-counselor relationship and increases the acceptability of the service. One factor of many in a given services degree of confidentiality is staff receiving specific
guidance on the matter, the amount of privacy of the counseling and testing areas and a written policy on confidentiality.\textsuperscript{154,155}

A number of further HIV prevention aspects relating to VCT services are of relevance, including anonymous testing and condom distribution. Relating to confidentiality, the provision of anonymous testing has also been shown in the United States to dramatically increase uptake of HIV testing services.\textsuperscript{156,157} No studies regarding increased uptake associated with anonymous testing in an African country were found. However, UNAIDS mentions anonymous testing availability as a common principle associated with confidentiality and it is an important element of the effectiveness of a well-documented VCT center, the AIDS Information Center in Uganda.\textsuperscript{158,159} It is also recommended that anonymous VCT service be available in the national VCT guidelines.\textsuperscript{160} Distribution of male and female condoms has been shown to be an effective and cost-effective intervention with VCT sites being an optimal distribution point in that it combines condoms with elements of HIV education (within counseling sessions).\textsuperscript{161,162,163,164}

**Voluntary Counseling and Testing in Ghana**

As previously mentioned, VCT is an important element in the prevention of HIV transmission that has been acknowledged by the government and ministry of

\textsuperscript{158} UNAIDS. (2002). HIV voluntary counseling and testing: a gateway to prevention and care. June 2002
\textsuperscript{159} UNAIDS (2002). \textit{Knowledge is power: voluntary HIV counseling and testing in Uganda}. UNAIDS. June 1999 (second reprint: June 2002)
\textsuperscript{161} UNAIDS (2001) \textit{Innovative approaches to HIV prevention}. October 2000
health. At the time of writing, the Ghana AIDS Commission and the National AIDS Control Program in cooperation with UNAIDS, WHO, FHI, USAID and others completed a draft of *Guidelines for the development and implementation of HIV VCT in Ghana* to help standardize HIV testing and counseling. More details on this document are given in the following section.

Very few studies on VCT within Ghana or Accra have been published however and this study is one attempt at offering some baseline data on VCT within the district. One study on VCT services in Accra found an acceptance rate of 34% with 70 individuals testing out of 207 visits, illustrating a demand for such services within the district.165 Regarding the affordability of VCT services, there was only one study found performed in northern, rural district of Ghana in 2002 targeting pregnant women. Baiden and Remes found that 25.7% of respondents (N=136) wanted HIV testing for free. 40.4% felt that testing should cost less than US$ 0.25 with a median affordable cost of US$ 0.20. Additionally, socioeconomic status did not significantly influence how much respondents considered affordable.166 This study’s results should not be assumed to be applicable to larger urban populations. However, they do offer a rough indication of what financial burden is acceptable for VCT amongst one population subset in Ghana and indicate, not surprisingly, that there is a demand for free services. One UNAIDS document promotes exemption policies and/or price reduction strategies such as “free days” or “2 for 1 days” to encourage clients who might otherwise avoid VCT that is based upon a fee-for-service principle and this has also been addressed in the national VCT guidelines.167,168

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HIV Testing and Counseling Policy Overviews

UNAIDS Policy on HIV Testing and Counseling

One central document in testing and counseling policy for HIV is set out by UNAIDS in its 1997 publication *Policy on HIV Testing and Counseling*.\(^{169}\) It begins by detailing a number of potential benefits in testing and counseling for HIV which are outlined in the document: “improved health status through...nutritional advice and earlier access to care and treatment/prevention for HIV-related illness; emotional support; better ability to cope with HIV-related anxiety; awareness of safer options for reproduction and infant feeding; and motivation to initiate or maintain safer sexual and drug-related behaviors”.\(^{170}\)

UNAIDS consequently has set guidelines for the development of national policies relating to HIV testing and counseling, as outlined here.\(^{171}\)

- “to make good-quality, voluntary and confidential HIV testing and counseling available and accessible”. Services should provide pre-test counseling, informed consent and post-test counseling.
- Women should be given special consideration and be provided with information on reproductive and infant feeding options, as well as PMTCT. Women should be allowed to make their own informed decisions.
- Confidentiality and informed consent should be ensured in clinical care, research, donation programs (such as blood) and “other situations where an individual’s identity will be linked to...HIV test results”.
- To strengthen quality assurance and safeguards prior to licensing HIV home-tests.
- Community involvement in epidemiological and sentinel surveys should be encouraged.
- Mandatory testing, testing without informed consent and/or confidentiality should be discouraged.

This policy was further clarified in 2004 in the context of expanding access to ARV therapy in many developing countries. UNAIDS and WHO again emphasized the conditions advocated for testing known as the “three C’s”. Four testing contexts were

\(^{169}\) see also UNAIDS (2000). *Voluntary counseling and testing technical update*. UNAIDS. May 2000


\(^{171}\) *Ibid.*
also defined: VCT, diagnostic HIV testing, the *routine offer* of testing (as in PMTCT centers or at STI clinics) and mandatory HIV *screening* of donated blood and blood products. Additionally, it was stated that HIV testing must be grounded in human rights norms.\(^{172}\)

*National Guidelines for the Development and Implementation of HIV Voluntary Counseling and Testing in Ghana (Draft)*\(^{173}\)

The following is an overview of the draft document establishing guidelines for voluntary HIV testing and counseling provided by the Ghana AIDS Commission and the National AIDS Control Program. Included are points determined relevant to the scope of this study. At the time of data collection, these guidelines had not yet been published or distributed. The document contributors included Family Health International, Ghana AIDS Commission, National AIDS Control Program, UNAIDS, USAID and the World Health Organization.

- **Organizational Guidelines** – includes guidelines regarding setting, staffing, equipment and supplies, fees and linked services
  a. Communities should be involved through organization-linkages for support, consensus and to ensure referrals.
  b. VCT may be undertaken at stand-alone sites, integrated into existing health facilities or offered as mobile outreach services
  c. A site seeing between 10-20 individuals per day should have at least two private, quiet counseling rooms and a waiting room with a TV, VCR and relevant IEC materials. A laboratory is optional.
  d. The site should be equipped with “a minimum of two HIV test kits with different testing formats and a referral lab with a third tie-breaker test”.
  e. Gloves for universal precautions
  f. One dedicated counselor (with one counselor for every five patients being ideal)
  g. Counselors should have completed a minimum of a ten-day course in counseling

\(^{172}\) UNAIDS and WHO (2004). *Policy statement on HIV testing*. June 2004

h. The following services should be linked to VCT: Detection and treatment of STIs, links to TB control sites, basic family planning services

i. A referral and support network should be established and utilized by counselors to meet the client’s needs. “It is the responsibility of the counselor to know of and to mobilize additional services to meet client needs.”

• **Guidelines on HIV Test-related Counseling**
  a. “VCT services should preserve individual needs for confidentiality”
  b. “When testing is for diagnostic purposes…similar procedures for pre-test counseling should be followed” and those who refuse testing should give informed dissent and their decision should be respected.
  c. “Confidentiality should be apparent in all activities of the VCT site. All members of staff should observe confidentiality.”
  d. Anonymous VCT services should be available
  e. “Obtaining informed consent must be given special attention...and consent forms must be signed or thumb-printed by the client before testing.”
  f. “The ‘standard’ VCT package of pre-test counseling followed by blood draw (where client decides to test) and post-test counseling should remain the ‘golden standard’.”
  g. Individual pre-test counseling should be provided to all those requesting VCT and for those testing for diagnostic purposes or for other reasons where the client will be informed of the test result.
  h. The “window period” should be explained and retesting after 3 months for those having had recent (< 6 months) risky behavior should be encouraged.

• **Guidelines on HIV Testing** – testing strategies, algorithms, quality control
  a. The recommended testing strategy is with rapid, whole blood tests that provide a same day result. The client should receive the result in two hours or less.
  b. Saliva and urine-based HIV tests will not be introduced for VCT until they have been evaluated.
  c. The HIV testing algorithm utilizes a simple, rapid assay or ELISA for screening and a second antibody test as a confirmation. An HIV-positive result is assumed when both tests are positive. For district hospitals,
health centers, mission hospitals and VCT sites, the recommended algorithm is an initial screening assay (Abbott Determine HIV 1 & 2) with a supplementary assay for initially reactive samples (Rapitest HIV-1/2).\textsuperscript{174}

d. Serial testing should be used in Ghana, with one rapid screening assay performed, and, if the result is positive, a confirmatory test should be done with a second, different rapid test. Enough blood should be drawn so a second sample need not be taken.

e. When there is a discrepancy between the first screening assay and the second confirmatory assay, a third, different test should be performed. Additional testing should be done at a quality-control certified laboratory.

f. It is recommended that laboratory technologists perform all HIV testing. In some settings, it is acceptable for properly trained nurses and counselors to perform simple, rapid tests.

g. “All precautions to protect against blood contamination should be observed.”

h. 10\% of the samples should be retested at a quality control-certified laboratory, including both HIV-positive and negative samples for quality assurance purposes.

VIII. Methodology

Study Type

This was a descriptive study intended to explore, collect and present data about HIV rapid testing and VCT services in the Accra Metro district and to offer an initial, baseline picture of testing and VCT services within the district. The study utilized primarily quantitative structured interviews (see Annex A) with some use of direct observation as data collection techniques.

Study Population

The study population included sites potentially offering HIV testing within the Accra Metro district. The unit of study was one facility, consisting generally of a public or private hospital, clinic or laboratory or a non-governmental organization. A list of these sites within the district was obtained from a variety of sources within the Ghanaian government: the Accra Metro District Health Office provided a list of hospitals and clinics, both public and private, within the district; the National AIDS Control Program and the Ghana AIDS Commission were sources for HIV-related non-governmental organizations and the Ghana Health Services Public Health Reference Laboratory provided a listing of private laboratories. Although a number of workplace programs for HIV education were in place, no functioning workplace programs for HIV testing / VCT were discovered within the district at the time of data collection.

The data employed in the study was collected through structured interviews undertaken with counseling staff, or in cases where counseling was not provided, generally a laboratory technologist. Additional data was obtained through direct observations at each site.

Sampling Method

In order to represent the heterogeneity of testing facilities in the district and for reasons of feasibility, quota sampling was used for selecting the study sample. A list of possible testing sites within the district was first discussed with the National AIDS Control Program and the Metro and Regional Health Directorates. The population was divided into the following subsets and the corresponding sample was taken which reflected what was achievable at that time:
• Public hospitals and clinics – 100% of the public hospitals and clinics were included.
• Public laboratories – 100% (N=2) of public laboratories were included.
• Private hospitals and clinics – a sample of 40 facilities was taken using systematic random sampling by sub-district and 35 were included (16.8%). Five sites did not participate.
• Private laboratories – a simple random sample was taken and 7 labs were included (28%).
• NGOs offering HIV testing – 100% (N=4) of these organizations were included.

Sample Size
Sample size was limited by feasibility, specifically due to restricted time, manpower and finances. Data was collected from sites located within the Accra Metro District. In total, 79 sites (29.4%) were initially surveyed out of 269 total facilities. Within the public sector, the number of facilities was manageable and a 100% sample was obtainable. The private sector had significantly more potential sites, therefore a sample was taken. (e.g. the only two public laboratories (100%) were visited as compared to 32%, or eight, of the private laboratories). The types and numbers of sites included in the study are detailed in the study profile figure below.

Of the 79 sites surveyed, 33 (41.8%) conducted HIV testing or served as an entry point for HIV testing (where samples or patients were sent to another site for the actual testing procedure). Interviews were carried out at each of these facilities.

Five of the private hospitals/clinics were excluded from the study. Of these, two clinics no longer existed and three declined to participate for a variety of reasons: a change of management, leading to uncertainty regarding policies; another required an ethical clearance from its board of directors and no response was obtained although the process was begun; and one clinic related to the military felt the topic was too sensitive to be able to take part in.
Data Collection and Quality Control

The variables measured captured characteristics of HIV testing services drawn from UNAIDS, WHO and national guidelines. Data was collected through structured interviews with staff of the facilities using a standard questionnaire and direct observation. The questionnaire was pre-tested at a local clinic for clarity, timing and logic and was adjusted as necessary. At each selected site, an initial interview with the director was done. This was meant as an introduction to the study’s methods and goals. Another primary objective was to determine whether voluntary counseling and testing or HIV testing was done at that facility. If VCT or HIV testing was not done,
then no further investigations were made. If it was performed, institutional consent was sought to perform further interviews with the staff, a list of counseling staff was generated where relevant and, if more than two counselors were present, the interviewees were chosen at random. Interviews were undertaken at each facility providing VCT with HIV counseling staff, primarily with dedicated HIV counselors or with individuals responsible for HIV counseling (such as doctors or laboratory technologists). To increase the reliability of the data collected, efforts for triangulation were undertaken, including performing two separate interviews per site in addition to direct observations made. In four cases it was only possible to interview one individual due to an absence of a second knowledgeable person. These sites were nevertheless included in the study. In three cases, the reason stemmed from a lack of any other staff with relevant knowledge. In one case, repeated attempts at secondary interviews were not successful. In all other cases where VCT was done, two interviews were performed. Direct observations were made of the following:

- The HIV tests and the testing procedure
- The counseling area
- The presence of a counselor
- The laboratory area
- The presence of a laboratory technician
- The waiting area

One research assistant (RA), a biologist and HIV counselor, was employed for the data collection process. He was trained over a period of 2.5 days with an initial discussion regarding the study’s background, scope, objectives and methodology, as well as what his involvement, responsibilities and financial compensation would be. The second day involved the RA observing interviews conducted by the primary investigator followed by a discussion for evaluations, questions and answers. The last training day consisted of the RA conducting 2 interviews in the presence of the primary investigator, also followed by an evaluation and discussion. A study handbook was provided to explain and ensure the clarity of the questions to be asked as well as to outline important points to remember regarding the study and data collection process (see annexes). Also provided to the RA were letters of introduction from the principal investigator, as well as approvals and certifications from the principal investigator, the National AIDS Control Program, the regional AIDS director, the metro health director and the ethical clearance from the Health Research Institute. Also
included were the study proposal and an executive summary as well as a list of sites to be surveyed and included. Data collection sites for the RA were limited to private sector sites and were randomly divided by sub-district between the RA and the principal investigator. Meetings were held every second or third day to collect the most recent surveys, resolve any ambiguous results and deal with any outstanding issues. For quality control, 20% (n=7) of the sites were contacted at random following the visit by the research assistant to ensure that a visit/interview was made and to ascertain whether the site did or did not provide voluntary testing and counseling.

Data Analysis

Data were rechecked for completeness and internal consistency throughout the data collection period. Data were sorted by numeric and categorical variables and coded following collection. They were then entered into SPSS 11 and Microsoft Excel v.X for final analysis. Data entered was rechecked once immediately after entry, then against a master sheet printout following the completion of data entry. A data master sheet was generated to facilitate analysis. A descriptive analysis was undertaken using frequency counts, percentages and contingency tables. Due to the small sample size (>20 and <40) and low (<5) expected values, the Chi-squared test is not a sufficient statistical test. Therefore, Fisher’s exact test was used with contingency tables as a significance test. It must be emphasized that though p-values are given and tendencies may be suggested by the data, the sample size is too small to make any definitive remarks regarding the district as a whole (see Study Limitations in the discussion section). Additionally, neither SPSS nor Excel included a function for the exact test and an online calculator developed at St. John’s University (USA) Department of Physics was used. Final outcomes were determined and comparisons to standards drawn from the national guidelines were evaluated. The data was organized and summarized using tables, charts and graphs.

Ethical Considerations

Ethical approval for the study was obtained from the Health Research Board of the Ghana Health Services. The study was undertaken in local partnership with the

176 Online Fischer Exact test calculator site:
http://www.physics.csbsju.edu/stats/exact_NROW_NCOLUMN_form.html
National AIDS Control Program and was approved by both the Regional HIV/AIDS Director and the Accra Metro District Health Directorate. Access to HIV counselors, project managers and the staff of organizations involved in HIV testing at each site was required. Therefore, institutional permission, in addition to individual participant consent, was also necessary. This was obtained verbally from each institution’s director following a discussion of the study, its methods, scope and objectives. Signed written statements of informed consent were obtained prior to data collection from each study participant. The statement informed participants of the voluntary and confidential nature of the study, as well as the possibility to withdraw from the study at any time for any reason by written or verbal notification of the primary investigator (see Annex B).

It was emphasized that data obtained from the study participants and all observations would remain strictly confidential. Furthermore, data collected would be used only for purposes of the study. This was assured, as access to the data is limited only to the primary investigator and research assistant. For the purposes of this study, there was no contact or interviews with patients or clients of the aforementioned services. Study participants were limited only to consenting managers and staff of testing sites willing to participate. This minimized issues of patient confidentiality.
IX. Results

VCT Providers in the Accra Metro District

This analysis begins by looking at where HIV voluntary counseling and testing is provided within the Accra metro district. Of the 79 sites surveyed for the study, 33 (41.7%) provided HIV testing to the public. Of these 33, both interviewees at one site (3.0%) stated they performed only diagnostic HIV testing and no voluntary counseling and testing. However, this was a pediatric hospital and both counselor’s could not rule out that mother and partner voluntary testing could, albeit rarely, occur. Counselor’s at two other sites stated they performed VCT only “very rarely” (both counselors estimated <1% of their overall testing). Another research laboratory also provided HIV testing, particularly as a referral laboratory for other HIV testing providers, and conducted testing for VCT infrequently.

Facilities that provided VCT services were as follows: 14.3% (N=5) of the private hospitals and clinics sampled; 46.6% (N=14) of the public hospitals and clinics. 87.5% (N=7) of the private laboratories and both of the only two public laboratories.

Table 2: Voluntary testing by type of facility

<table>
<thead>
<tr>
<th>HIV voluntary testing provided?</th>
<th>NGO</th>
<th>Public Clinic</th>
<th>Public Hospital</th>
<th>Public Laboratory</th>
<th>Private Clinic</th>
<th>Private Hospital</th>
<th>Private Laboratory</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>4</td>
<td>0</td>
<td>14 (45.2%)</td>
<td>1 (3.2%)</td>
<td>4 (12.9%)</td>
<td>1 (3.2%)</td>
<td>7 (22.6%)</td>
<td>31</td>
</tr>
<tr>
<td>No</td>
<td>0</td>
<td>15 (31.3%)</td>
<td>1 (2.1%)</td>
<td>22 (45.8%)</td>
<td>8 (16.7%)</td>
<td>1 (2.1%)</td>
<td>22 (45.8%)</td>
<td>48</td>
</tr>
<tr>
<td>Total</td>
<td>4</td>
<td>15 (19.0%)</td>
<td>15 (19.0%)</td>
<td>2 (2.5%)</td>
<td>26 (32.9%)</td>
<td>9 (11.4%)</td>
<td>8 (10.1%)</td>
<td>79</td>
</tr>
</tbody>
</table>

Of the sites surveyed that provided HIV testing, 52% (95 CI: 43.2, 60.8) were within the public sector at either public laboratories (6%) or hospitals/clinics (46%). 36% (95 CI: 28.7, 43.3) facilities were within the private sector, including private laboratories (21%) and hospitals/clinics (15%). 12% consisted of non-governmental organizations (NGOs).
The following table gives a breakdown of the number of sites visited that delivered VCT services as well as the total number of healthcare and laboratory facilities within each sub-district. At ten of these facilities, counselors stated that VCT made up ten percent or less of the overall HIV testing undertaken:

<table>
<thead>
<tr>
<th>Sub-district</th>
<th>Number of HIV testing sites and/or VCT providers surveyed</th>
<th>Total healthcare and laboratory sites</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ablekuma</td>
<td>6</td>
<td>78</td>
</tr>
<tr>
<td>Ashiedu Keteke</td>
<td>3</td>
<td>25</td>
</tr>
<tr>
<td>Ayawaso</td>
<td>9</td>
<td>66</td>
</tr>
<tr>
<td>Kpeshie</td>
<td>4</td>
<td>28</td>
</tr>
<tr>
<td>Okaikoi</td>
<td>4</td>
<td>34</td>
</tr>
<tr>
<td>Osu Klottey</td>
<td>7</td>
<td>38</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>33</strong></td>
<td><strong>269</strong></td>
</tr>
</tbody>
</table>

**Table 3: VCT providers by sub-district**

Regarding the VCT delivery models, there were four NGOs (12.1%) which were “stand-alone” sites. Two of these also provided mobile outreach services (6.1%) and two were connected to small clinics run by the organizations, thus overlapping somewhat into the integrated model. The 17 public facilities would fall into the integrated model (51.5%) as part of hospital complexes. There were 12 facilities (36.4%) falling into the private model, either within a hospital / clinic or at a clinical laboratory. There was at least one public sector-NGO partnership.

In this sample of 79 facilities, provision of voluntary testing was provided at 15 out of 32 public facilities surveyed (46.9%) and 12 out 43 private sites (27.9%, 95 CI: 21.0, 34.7) along with all four NGOs. VCT was provided largely by the public sector and NGOs which accounted for an estimated 71% (36% and 35%, respectively) of the testing performed between January and October 2003 in the sample, compared to the private sector which accounted for an estimated 32%. During this period, approximately 287 visits were made for voluntary testing per month at the facilities studied. However, this estimate was derived through both logbooks and counselor interviews and its precision cannot be assured nor validated as no reference data regarding VCT was available at the time of this writing from the ministries of health. It is meant to serve here as a ballpark figure for VCT utilization in the Accra Metro district. At two sites out of the 33 surveyed which provided HIV testing, counselors stated that they performed testing for VCT purposes very rarely and tested almost only for clinical diagnostic purposes (though they did not exclude the possibility of performing voluntary testing if requested).
HIV Testing Contexts

The testing context that each site provided was estimated and derived from the interviews in following manner: both interviewees (primarily counselors) were asked to estimate what percentage of visits were for diagnostic purposes (either referrals from a doctor or testing for PMTCT), what percentage were for voluntary testing and counseling and what percentage were mandatory (for example, for visas, marriage licenses or religious affiliations). The two estimates were averaged and if the counselors estimates of a given reason for visits to that facility was above 50%, the stated context was defined to be the primary context for that site. This assigned an approximate context to all the facilities drawn from two sources, showing where some sites focused primarily on diagnosis and others on VCT services. If all reasons fell below 50%, the site was defined as having mixed contexts.

Testing contexts differed somewhat amongst all the facilities sampled. About 30% of the sites conducted >50% of their testing for VCT. However, 32 sites (97.0%) conducted some amount of voluntary testing, with estimates on the percentage of VCT activity compared to other testing contexts (i.e. diagnostic/preventative or mandatory) ranging from 1% to 100%. One site did not regularly perform testing in the context of VCT, but would provide it under special circumstances. Of the sites providing testing, respondents at one pediatric hospital declared that testing had not been performed for VCT and 100% of the testing was for clinical diagnostic purposes, though testing of mother and/or father could occur if requested.

<table>
<thead>
<tr>
<th>Type</th>
<th>voluntary testing</th>
<th>diagnostic testing</th>
<th>mandatory testing</th>
<th>mixed</th>
<th>unknown</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clinic</td>
<td>1 (25%)</td>
<td>1 (25%)</td>
<td>1 (25%)</td>
<td>1 (25%)</td>
<td>0</td>
<td>4 (100%)</td>
</tr>
<tr>
<td>Hospital</td>
<td>4 (25%)</td>
<td>10 (62.5%)</td>
<td>1 (6.3%)</td>
<td>1 (6.3%)</td>
<td>0</td>
<td>16 (100%)</td>
</tr>
<tr>
<td>Laboratory</td>
<td>1 (3%)</td>
<td>2 (22.2%)</td>
<td>1 (3%)</td>
<td>2 (22.2%)</td>
<td>3 (33.3%)</td>
<td>9 (100%)</td>
</tr>
<tr>
<td>NGO</td>
<td>4 (100%)</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>4 (100%)</td>
</tr>
<tr>
<td>Total</td>
<td>10 (30.3%)</td>
<td>13 (39.4%)</td>
<td>3 (9.1%)</td>
<td>4 (12.1%)</td>
<td>3 (9.1%)</td>
<td>33</td>
</tr>
</tbody>
</table>

Table 4: Primary testing context and sub-type

<table>
<thead>
<tr>
<th>Sector</th>
<th>voluntary testing</th>
<th>diagnostic testing</th>
<th>mandatory testing</th>
<th>mixed</th>
<th>unknown</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>private</td>
<td>3 (25%)</td>
<td>3 (25%)</td>
<td>2 (17%)</td>
<td>3 (25%)</td>
<td>1 (8%)</td>
<td>12 (100%)</td>
</tr>
<tr>
<td>public</td>
<td>3 (17.6%)</td>
<td>10 (58.8%)</td>
<td>1 (5.9%)</td>
<td>1 (5.9%)</td>
<td>2 (11.8%)</td>
<td>17 (100%)</td>
</tr>
<tr>
<td>NGO</td>
<td>4 (100%)</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>4 (100%)</td>
</tr>
<tr>
<td>Total</td>
<td>10 (30.3%)</td>
<td>13 (39.4%)</td>
<td>3 (9.1%)</td>
<td>4 (12.1%)</td>
<td>3 (9.1%)</td>
<td>33 (100%)</td>
</tr>
</tbody>
</table>

Table 5: Primary testing context and sector
In terms of utilization of the included study sites, estimates drawn from both log books and counselor interviews show approximately 287 visits for VCT per month at 29 sites over the period January to October 2003. Of these visits, 35.2% were at NGOs, 36.2% at public hospitals/clinics, 26.1% at private hospitals/clinics and 6.0% at private laboratories. These figures offer a rough estimate only and could be considered a minimum and their accuracy may also be affected by sampling bias due to non-randomized quota sampling. Furthermore, the tally excludes one public laboratory that performed primarily diagnostic testing and did not have specific data on the numbers of tests done as referrals for other sites versus those done as walk-ins exclusive to that laboratory. One large public hospital also declined to give any details regarding the numbers and contexts of persons tested and was excluded from the calculation.

**Use of Guidelines at Testing Centers**

Staff at ten of the testing sites stated that external guidelines were used for their organization’s testing policies.

**Table 6: Are any external guidelines used for the organization’s testing policies?**

<table>
<thead>
<tr>
<th>Public or private?</th>
<th>Interviewee response</th>
<th>Discrepant responses</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>private</td>
<td>3 (25.0%)</td>
<td>9 (75.0%)</td>
<td>0</td>
</tr>
<tr>
<td>public</td>
<td>4 (23.5%)</td>
<td>10 (58.8%)</td>
<td>3 (17.6%)</td>
</tr>
<tr>
<td>NGO</td>
<td>4 (100%)</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>11 (33.3%)</td>
<td>19 (57.6%)</td>
<td>3 (9.1%)</td>
</tr>
</tbody>
</table>

Fisher exact test p=0.023

Of the facilities that stated guidelines were referred to for testing and/or counseling practices, four were NGOs, four were public hospitals, one was a private hospital and two were private laboratories. The specific guidelines stated to be used differed at these sites. At five facilities, both interviewees stated that only National AIDS Control Program guidelines were used. This was also possibly the case at a fifth site, where a one counselor stated the same though this was not confirmed by the second counselor who was not aware of any guidelines. Additionally, one site used guidelines from Family Health International (FHI), one site used those from the Centers for Disease Control and one site used WHO guidelines. At another facility, staff stated...
they used both NACP and FHI guidelines. One facility had counselors who gave a mixed answer regarding which guidelines were used: one stating FHI and the other counselor saying those of the Ghana AIDS Commission. Of those counselors offering discrepant answers (one stating “yes” to guideline use, the other “no”), one counselor at each of three facilities stated that NACP guidelines were used and at the fourth, one counselor stated that WHO guidelines were used. In summary, at about 30% of the testing facilities, counselors were knowledgeable of and claimed to use external guidelines as a framework for their VCT and/or HIV testing practices.

**HIV testing services and conditions**

The results following in this section are intended to make an initial, nominal assessment as to whether certain conditions or services are present and/or undertaken at each of the HIV VCT sites: fees, confidentiality and informed consent, pre/post/ongoing counseling, links to HIV services, PMTCT services. The majority of these have been addressed in some form within the National VCT Guidelines

**Fees**

Fees charged for HIV testing (+/- counseling) were assessed at each site. At the time of data collection, €1 was approximately equivalent to 10,000 Ghanaian cedis. Fees for HIV testing and counseling ranged from no fee charged to 250,000 cedis (€25). NGOs (which are considered separate from either public or private institutions in this study, falling somewhere between the two) and public facilities were relatively less expensive than private facilities. NGOs charged an average of 15,000 cedis with a mode of 20,000. Public facilities charged an average of 58,103 cedis with a mode of 50,000. Private facilities charged an average of 90000 cedis with a mode of 100000. Six sites charged no fee. Of the 27 sites that charged a fee for testing, 18.5% (n=5) offered an option for those unable to pay. These consisted of 3 NGOs and 2 public hospitals. 74% (n=20) offered no option for those unable to pay and in 7.5% (n=2), the counselors stated they did not know of any such option. 50,000 cedis was the most often charged fee and the average overall was 52,878 cedis.
Confidentiality and informed consent

Confidentiality was evaluated by three points. The first was whether counseling was done in a separate room or area, away from other clients to ensure privacy. This was assessed through both the interview and direct observation. 22 sites out of the 29 that offered counseling with testing provided a separate and private room for counseling.

Table 7: Is counseling done in a separate room or area to ensure privacy? (of the 29 sites providing counseling)

<table>
<thead>
<tr>
<th>Sector</th>
<th>Interviewee response</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>private</td>
<td>9 (100%)</td>
<td>0</td>
</tr>
<tr>
<td>public</td>
<td>9 (56.3%)</td>
<td>2 (12.5%)</td>
</tr>
<tr>
<td>NGO</td>
<td>4 (100%)</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>22 (75.9%)</td>
<td>2 (6.9%)</td>
</tr>
</tbody>
</table>

Fisher exact test p=0.123
Secondly, the testing area was observed. In nine cases (27.3%), no testing was done at the site and samples were sent to an external laboratory. In the other 24 cases (72.7%) where HIV testing was undertaken on-site, testing was always performed out of sight of other clients and staff in a closed laboratory.

Lastly, counselors were asked if staff were given guidance in the importance of confidentiality with respect to HIV. In two cases, counselors stated that no guidance was given to the staff regarding HIV and confidentiality. At 31 sites (94%), counselors stated that staff had been instructed regarding confidentiality and HIV. This was not independently verified. The two sites where this was not the case were one public hospital and a private laboratory, though the sample size was again not large enough to draw any statistically significant conclusions.

At a majority of sites, interviewees stated there were no written guidelines or policies on informed consent. This included informed consent forms, which were present at seven sites.

Table 9: Is there a written policy or guidelines on informed consent (e.g. informed consent form) by type?

<table>
<thead>
<tr>
<th>Type</th>
<th>Interviewee response</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Hospital or clinic</td>
<td>3 (15%; 95 CI: 20.0, 23.0)</td>
<td>17 (85%; 95 CI: 77.0, 93.0)</td>
</tr>
<tr>
<td>Laboratory</td>
<td>0</td>
<td>9 (100%)</td>
</tr>
<tr>
<td>NGO</td>
<td>4 (100%)</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>7 (21.2%; 95 CI: 14.1, 28.3)</td>
<td>26 (78.8%; 95 CI: 71.7, 85.9)</td>
</tr>
</tbody>
</table>

Fisher exact test p=0.001
No difference was found in whether the site was public or private amongst the sample. All of the NGOs however did provide written statements of informed consent for individuals taking the test.

Table 10: Is there a written policy or guidelines on informed consent (e.g. informed consent form) by sector?

<table>
<thead>
<tr>
<th>Sector</th>
<th>Interviewee response</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>private</td>
<td>1 (8.3%; 95 CI: 0.3,16.3)</td>
<td>11 (91.7%; 95 CI: 83.7,99.7)</td>
</tr>
<tr>
<td>public</td>
<td>2 (11.8%)</td>
<td>15 (88.2%)</td>
</tr>
<tr>
<td>NGO</td>
<td>4 (100%)</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>7 (21.2%; 95 CI: 14.1,28.3)</td>
<td>26 (78.8%; 95% CI: 71.7, 85.9)</td>
</tr>
</tbody>
</table>

Fisher exact test p=0.001

With regard to whether testing was ever performed without informed consent, at ten sites counselor interviewees stated this did occur. There was no statistically significant difference between the public, private and NGO sectors.

Table 11: Is HIV testing ever performed without informed consent? By sector.

<table>
<thead>
<tr>
<th>Sector</th>
<th>Interviewee response</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>private</td>
<td>3 (25%; 95 CI: 12.5,37.5)</td>
<td>9 (75%; 95 CI: 62.5,87.5)</td>
</tr>
<tr>
<td>public</td>
<td>6 (35.3%)</td>
<td>9 (52.9%)</td>
</tr>
<tr>
<td>NGO</td>
<td>1 (25%; 95 CI: 3.3,46.7)</td>
<td>3 (75%; 95 CI: 53.3,96.7)</td>
</tr>
<tr>
<td>Total</td>
<td>10 (30.3%; 95 CI: 22.3,38.3)</td>
<td>21 (63.6%; 95 CI: 55.2,72.0)</td>
</tr>
</tbody>
</table>

Fisher exact test p=0.771
Table 12: Is HIV testing ever performed without informed consent? By type.

<table>
<thead>
<tr>
<th>Sub-type</th>
<th>Interviewee response</th>
<th></th>
<th></th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes</td>
<td>No</td>
<td>Don't Know</td>
<td></td>
</tr>
<tr>
<td>Hospital or clinic</td>
<td>9 (45.0%; 95 CI: 33.9,56.1)</td>
<td>11 (55.0%; 95 CI: 43.9,66.1)</td>
<td>0</td>
<td>20 (100%)</td>
</tr>
<tr>
<td>Laboratory</td>
<td>0</td>
<td>7 (77.8%; 95 CI: 63.9,91.7)</td>
<td>2 (22.2%; 95 CI: 8.3,36.1)</td>
<td>9 (100%)</td>
</tr>
<tr>
<td>NGO</td>
<td>1 (25.0%; 95 CI: 3.3,46.7)</td>
<td>3 (75.0%; 95 CI: 53.4,96.7)</td>
<td>0</td>
<td>4 (100%)</td>
</tr>
<tr>
<td>Total</td>
<td>10 (30.3%; 95 CI: 22.3,38.3)</td>
<td>21 (69.7%; 95 CI: 61.7,77.7)</td>
<td>2 (6.1%; 95 CI: 1.9,10.3)</td>
<td>33 (100%)</td>
</tr>
</tbody>
</table>

Fisher exact test p=0.028

90% of the sites where counselors stated that testing was performed without obtaining informed consent were hospitals / clinics. In all cases where testing was performed without informed consent, counselors stated that those tested were tested for clinical diagnostic reasons.

Figure 8 below illustrates some elements of confidentiality and informed consent within the district.

HIV Counseling

Counseling for all contexts of HIV testing, diagnostic/preventative as well as voluntary/VCT, is recommended by the NACP and the Ghana Health Services, therefore all 33 facilities providing HIV testing are included in this analysis. Observation of the presence of counselors was made at each site, though specific counseling training was not verified. HIV counselors were present at 87.9% (n=29) of the sites providing HIV testing. The plurality of counseling was provided by nurses. Four sites had no trained counselors on staff and offered no counseling. Accordingly, those four sites offered neither pre- nor post-test counseling.
Table 13: Is counseling offered (by type)?

<table>
<thead>
<tr>
<th>Type</th>
<th>Interviewee response</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Hospital or clinic</td>
<td>0</td>
<td>20 (100%)</td>
</tr>
<tr>
<td>Laboratory</td>
<td>4 (44.4%; 95 CI: 19.5, 69.2)</td>
<td>5 (55.6%; 95 CI: 33.4, 77.8)</td>
</tr>
<tr>
<td>NGO</td>
<td>0</td>
<td>4 (100%)</td>
</tr>
<tr>
<td>Total</td>
<td>4 (12.1%; 95 CI: 6.4, 17.8)</td>
<td>29 (87.9%; 95 CI: 81.8, 94.0)</td>
</tr>
</tbody>
</table>

Fisher Exact Test p=0.006

Table 14: Is counseling offered (by sector)?

<table>
<thead>
<tr>
<th>Sector</th>
<th>Interviewee response</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>private</td>
<td>3 (25.0%)</td>
<td>9 (75.0%)</td>
</tr>
<tr>
<td>public</td>
<td>1 (5.9%)</td>
<td>16 (94.1%)</td>
</tr>
<tr>
<td>NGO (public/private)</td>
<td>0</td>
<td>4 (100%)</td>
</tr>
<tr>
<td>Total</td>
<td>4</td>
<td>29</td>
</tr>
</tbody>
</table>

Fisher Exact Test p=0.312

The four sites not offering any counseling with HIV testing were all laboratories and included three private sites and one public facility. The differences in the public and private analysis are not statistically significant.

With the exception of doctors, all persons performing counseling stated that they had taken counseling courses, though this information was not independently confirmed. Counseling courses were provided by different parties, including the NACP, the Ghana AIDS Commission, the Regional AIDS Directorate, individual hospitals and NGOs. Counseling was performed in most cases by nurses. At five sites, counseling was performed by doctors and at five, by laboratory technologists. Five sites had trained HIV counselors from other non-medical professions including a student (of computer technology), a secretary, a psychologist, a sociologist, a businessman, a biologist and a computer specialist. The four NGOs and one public hospital utilized trained counselors from other professions.
Table 15: Who performs the counseling?

<table>
<thead>
<tr>
<th>Interviewee response</th>
<th>%</th>
<th>Total #Sites</th>
</tr>
</thead>
<tbody>
<tr>
<td>Doctor</td>
<td>9.1</td>
<td>3</td>
</tr>
<tr>
<td>Doctor or lab technologist</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Doctor or nurse</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Nurse</td>
<td>45.5</td>
<td>15</td>
</tr>
<tr>
<td>Lab technologist</td>
<td>12.1</td>
<td>4</td>
</tr>
<tr>
<td>Trained HIV Counselor – other profession</td>
<td>15.2</td>
<td>5</td>
</tr>
<tr>
<td>No counseling done</td>
<td>12.1</td>
<td>4</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>100</td>
<td>33</td>
</tr>
</tbody>
</table>

Regarding pre-test counseling, four sites with counselors on staff stated that pre-test counseling was offered “sometimes”. Three of these cases were at sites performing diagnostic HIV testing in more than 50% of the cases while one site’s primary testing context was unknown.

Table 16: Is pre-test counseling offered? By type.

<table>
<thead>
<tr>
<th>Type</th>
<th>Interviewee response</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes</td>
<td>No or Sometimes</td>
</tr>
<tr>
<td>Hospital or Clinic</td>
<td>17 (85%; 95 CI: 77.0,93.0)</td>
<td>3 (15%; 95 CI: 7.0,23.0)</td>
</tr>
<tr>
<td>Laboratory</td>
<td>4 (44.4%; 95 CI: 27.8,61.0)</td>
<td>5 (55.6%; 95 CI: 39.0,72.2)</td>
</tr>
<tr>
<td>NGO</td>
<td>4 (100%)</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>25 (75.8%; 95 CI: 68.3,83.3)</td>
<td>8 (24.2%; 95 CI: 16.7,31.7)</td>
</tr>
</tbody>
</table>

*Fisher exact test p=0.051*

Table 17: Is post-test counseling offered? By sector.

<table>
<thead>
<tr>
<th>Type</th>
<th>Interviewee response</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes</td>
<td>No or sometimes</td>
</tr>
<tr>
<td>Hospital or clinic</td>
<td>20 (100%)</td>
<td>0</td>
</tr>
<tr>
<td>Laboratory</td>
<td>4 (44.4%; 95 CI: 27.8,61.0)</td>
<td>5 (55.6%; 95 CI: 39.0,72.2)</td>
</tr>
<tr>
<td>NGO</td>
<td>4 (100%)</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>28 (84.9%; 95 CI: 78.7,91.1)</td>
<td>5 (15.1%; 95 CI: 8.9, 21.3)</td>
</tr>
</tbody>
</table>

*Fisher exact test p=0.001*

At three sites, counselors stated that pre-test counseling was only sometimes offered to patients being tested for HIV. At one site that performed mainly diagnostic HIV testing (an estimated 95% of the cases out of about 200 tests per month) and
infrequently tested for the purposes of VCT, the counselors stated they routinely asked clients if they knew why they were there, whether they knew had been tested for HIV and whether they had had any pre-test counseling. Two counselors at this facility estimated independently that about 5% of those coming for post-test counseling had received pre-test counseling. At this same site, both counselors felt that post-test counseling was offered in almost all of the cases. In this study sample, sites offering primarily VCT claimed to offer pre-test counseling more often than those sites offering primarily diagnostic testing, though these differences were not statistically significant. Likewise, there was no statistically significant correlation found between whether a facility being public or private had a relationship in offering pre-test counseling.

Table 18: Is pre-test counseling offered? Compared to context.

<table>
<thead>
<tr>
<th>Principal testing context</th>
<th>Interviewee response</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes</td>
<td>No or Sometimes</td>
</tr>
<tr>
<td>voluntary testing</td>
<td>9 (90%; 95 CI: 80.5,99.5)</td>
<td>1 (10%; 95 CI: 0.5,19.5)</td>
</tr>
<tr>
<td>diagnostic testing</td>
<td>9 (69.2%; 95 CI: 56.4,82.0)</td>
<td>4 (30.8%; 95 CI: 18.0,43.6)</td>
</tr>
<tr>
<td>mandatory testing</td>
<td>3 (100%)</td>
<td>3 (100%)</td>
</tr>
<tr>
<td>mixed or unknown</td>
<td>4 (57.1%; 95 CI: 38.4,75.8)</td>
<td>3 (42.9%; 95 CI: 24.2,61.6)</td>
</tr>
<tr>
<td>Total</td>
<td>25 (75.8%; 95 CI: 68.3, 83.3)</td>
<td>8 (24.2%; 95 CI: 16.7, 31.7)</td>
</tr>
</tbody>
</table>

Fisher exact test p=0.33

Table 19: Is pre-test counseling offered? Compared to sector.

<table>
<thead>
<tr>
<th>Sector</th>
<th>Interviewee response</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes</td>
<td>No or Sometimes</td>
</tr>
<tr>
<td>private</td>
<td>9 (75.0%; 95 CI: 62.5,87.5)</td>
<td>3 (25.0%; 95 CI: 12.5,37.5)</td>
</tr>
<tr>
<td>public</td>
<td>12 (70.6%)</td>
<td>5 (29.4%)</td>
</tr>
<tr>
<td>NGO</td>
<td>4 (100%)</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>25 (75.8%; 95 CI: 68.3, 83.3)</td>
<td>8 (24.2%; 95 CI: 16.7, 31.7)</td>
</tr>
</tbody>
</table>

Fisher exact test p=0.731

The presence of ongoing counseling and/or psychosocial services was also examined. At 60.6% of the facilities surveyed, interviewees stated that one of these services was offered. Of the other 13 sites where interviewees either said no such
services were available or gave discrepant answers, 10 stated that there was a referral system in place, mentioning facilities referred to that did offer ongoing counseling services. Figure 6 below summarizes some elements relevant to counseling for HIV from the sample taken within the district.

![Facilities offering HIV Testing](chart)

<table>
<thead>
<tr>
<th>Feature</th>
<th>Percentage</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Counselor present</td>
<td>87.9%</td>
<td>29</td>
</tr>
<tr>
<td>Post test counseling</td>
<td>84.8%</td>
<td>28</td>
</tr>
<tr>
<td>Pre-test counseling</td>
<td>75.8%</td>
<td>25</td>
</tr>
<tr>
<td>Ongoing counseling</td>
<td>60.6%</td>
<td>20</td>
</tr>
<tr>
<td>Counseling protocol</td>
<td>18.2%</td>
<td>6</td>
</tr>
</tbody>
</table>

Figure 9: Aspects of counseling in Accra Metro

At all of the sites where counselors/staff stated that counseling was offered, counselors were able to give detailed answers to both of the questions “What topics are covered in pre-test counseling?” and “What topics are covered in post-test counseling?”. However, responses to these open questions will not be discussed in detail here. Two other questions surrounding the content of the counseling sessions were asked regarding infant feeding recommendations (see below) and counseling on the window period. At a majority of sites (87.9%), interviewees were aware the “window period” and stated that clients were informed of the window period and should be retested if recent risky behavior had occurred. The four sites stating “no” or “sometimes” were all laboratories.

Additionally, an observation made was that six sites (18.2%; all four NGOs and two hospitals) utilized a checklist for the purposes of pre and post-test counseling. 23 facilities had no such checklist and four sites did not offer counseling.

Linkages – referrals, treatment, PMTCT services, condom distribution anonymous testing and community outreach

The following are results regarding linkages and other services associated with each facility where HIV voluntary testing occurred.
Referral Systems

Interviewees at roughly 88% (N=29) stated that a referral system was in place. This was further confirmed in asking for a description of the referral system. All counselors stating that a referral system was in place were able to specifically describe to which facilities HIV-positive clients and patients were referred. At two facilities (one lab and one large hospital), counselors and staff stated no referral system was in place for HIV-positive persons and at two other large hospitals discrepant results were given between the two interviewees.

Treatment services

HIV treatment services such as anti-retroviral therapy were said to be present at seven of the 33 sites (21.2%). These included three private hospitals/clinics, three public hospitals and one NGO.

According to interviews, treatment for other HIV-related problems such as opportunistic infections was offered at 20 facilities (60.6%) to individuals testing HIV-positive.

PMTCT services

Three facilities (9.1%), two private clinics and one public hospital, were said to offer access to prevention of mother-to-child transmission services, which included single-dose Nevirapene therapy for mother and child. At 87.9% (N=29) of the facilities, interviewees stated that no special PMTCT services were offered.

With respect to infant feeding options for HIV-positive mothers, the interviewee responses suggested a spectrum of recommendations were given at different testing facilities as shown in the table on page 63.

<table>
<thead>
<tr>
<th>Type</th>
<th>Interviewee response</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hospital or clinic</td>
<td>Exclusive bottle-feeding recommended</td>
<td>6 (18.2%)</td>
</tr>
<tr>
<td>Hospital or clinic</td>
<td>Exclusive breastfeeding recommended</td>
<td>2 (6.1%)</td>
</tr>
<tr>
<td>Hospital or clinic</td>
<td>Income-dependent: Poor: exclusive breastfeeding; Non-poor: exclusive bottle-feeding</td>
<td>6 (18.2%)</td>
</tr>
<tr>
<td>Hospital or clinic</td>
<td>Mother informed of adv/disadv must choose; None given</td>
<td>0</td>
</tr>
<tr>
<td>Hospital or clinic</td>
<td>None given - referred</td>
<td>4 (12.1%)</td>
</tr>
<tr>
<td>Hospital or clinic</td>
<td>Discrepant answers</td>
<td>0</td>
</tr>
<tr>
<td>Laboratorv</td>
<td>0 (1.5%)</td>
<td>9 (100%)</td>
</tr>
<tr>
<td>NGO</td>
<td>1 (25%)</td>
<td>2 (50%)</td>
</tr>
<tr>
<td>Total</td>
<td>6</td>
<td>33 (100%)</td>
</tr>
</tbody>
</table>

Table 20: For HIV positive mothers, what are the recommendations given regarding breastfeeding or bottlefeeding?
Other services: condom distribution, community outreach and anonymous testing

Condoms were distributed at 48.5% (N=16) of the facilities. The 16 sites that did not provide condoms following counseling and/or testing included all of the laboratories surveyed as well as three public hospitals and four private hospitals/clinics. At one site, counselors gave discrepant responses.

Twenty of the facilities (60.6%) were involved in some form of community outreach. All four of the NGOs surveyed were involved in outreach undertaking actual mobile voluntary counseling and testing. However, these were the only facilities performing mobile VCT activities out of those surveyed. Other community outreach services included HIV education.

Anonymous testing was available at seven facilities (21.2%): five hospitals, one NGO and one laboratory. Interviewees at 23 facilities (69.7%) stated that no anonymous testing was performed. Three other sites gave discrepant answers or did not know. Some common reasons given for not offering anonymous testing was that it was never requested and that names and contact information were required to offer follow-up services.

HIV Rapid Test Use

This section intends to investigate the testing algorithms used by the facilities involved in HIV testing and VCT. The HIV testing algorithms were examined at all 33 sites offering HIV testing. 30.3% (N=10) of the sites surveyed performed no HIV testing on-site and sent either the client/patient or a sample to an external laboratory. 12.1% (N=4) of the sites performed all testing on-site. These sites included screening, confirmatory and tiebreaker testing. 27.3% (N=9) of the sites performed both screening and confirmatory testing while utilizing an external laboratory for any tiebreaker testing for discrepancies. 24.2% (N=8) carried out screening tests on-site and sent the patient or a sample to an external lab for confirmation testing. Two sites (6%) did screening testing on-site and performed no confirmatory testing.
Rapid tests were found to be used for HIV screening at 17 sites as well as within two of the four sites stated by interviewees in this study as being used as referral laboratories. The figure below illustrates the various algorithms used for HIV testing within the district. Presence of rapid tests, ELISAs and line immunoassays were confirmed through direct observations. However, utilization of external laboratories was not confirmed independently and relied upon information given by interviewees. The two sites that did not perform any confirmatory testing were a public hospital and a private laboratory. Sample sizes were again too small to draw any correlations between those not performing confirmatory testing and the type of facility.

At 32 sites (97%), all testing for HIV was performed either directly (on-site) or indirectly (at an external laboratory) by a laboratory technologist. At all of the external laboratories referred to, laboratory technologists were also employed. In only one case (3%) was testing performed by someone other than a laboratory technologist. In this instance it was performed by an HIV counselor who had attended a one week training session on HIV testing.

**Figure 10: Testing algorithm profile**

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For HIV testing, rapid tests were involved in the testing process at all 33 sites. 17 sites used them for screening tests and six others for confirmatory testing. 10 sites used referral laboratories, all of which were included in this study. All of the referral laboratories also used rapid tests; therefore these assays were also involved in the HIV testing process at these facilities. The following table details the rapid HIV tests that were found to be used at the sites surveyed in the Accra Metro District:

Table 21: Rapid tests used in the Accra Metro District

<table>
<thead>
<tr>
<th>Brand name</th>
<th>Manufacturer</th>
<th>Assay Type</th>
<th>Specificity</th>
<th>Sensitivity</th>
<th>Specificity</th>
<th>Sensitivity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Determine</td>
<td>Abbott</td>
<td>Immuno-chromatographic</td>
<td>97.96% (W. Africans)</td>
<td>100%</td>
<td>99.4% (96.7-100.0)</td>
<td>100% (95.5-100.0)</td>
</tr>
<tr>
<td>Rapitest HIV 1&amp;2</td>
<td>Morwell Diagnostics</td>
<td>Immuno-chromatographic</td>
<td>99.8%*</td>
<td>100%*</td>
<td>Not available</td>
<td>Not available</td>
</tr>
<tr>
<td>Bioline HIV 1/2</td>
<td>Standard Diagnostics</td>
<td>Immuno-chromatographic</td>
<td>99.8%*</td>
<td>100%*</td>
<td>99.3% (97.6-99.9)</td>
<td>100% (97.7-100.0)</td>
</tr>
<tr>
<td>Instant Screen HIV-1/2</td>
<td>Gaifar</td>
<td>Immunofiltration</td>
<td>100%</td>
<td>100%</td>
<td>100% (97.0-100.0)</td>
<td>100% (90.0-100.0)</td>
</tr>
<tr>
<td>Reveal</td>
<td>Medmira</td>
<td>Immunofiltration</td>
<td>99.31%*</td>
<td>99.75%*</td>
<td>97.6% (94.1-99.6)</td>
<td>100% (95.5-100.0)</td>
</tr>
<tr>
<td>Genie II</td>
<td>Biorad¹⁷⁹</td>
<td>Immuno-chromatographic</td>
<td>Not available</td>
<td>Not available</td>
<td>99.7% (98.1-100.0)</td>
<td>100% (97.7-100.0)</td>
</tr>
</tbody>
</table>

Abbott Determine®, Gaifar Instant Screen® and Medmira Reveal® were found to be used as rapid screening tests. These tests as well as the tests used for confirmatory testing also included antigens for detecting HIV-2.¹⁸⁰ All three screening assays were evaluated by the WHO and showed 100% sensitivity. The Medmira Reveal test was the only assay with a lower specificity than the WHO’s recommended >99%. Given a

¹⁸⁰ Product inserts for the following: Abbott Determine®, Gaifar Instant Screen® and Medmira Reveal®
population of 1.8 million and an HIV prevalence of 4.1% (for the Greater Accra Region), and using the WHO measures of the tests for specificity (99.4, 100.0, and 97.6%, respectively) and sensitivity (100% for all), the three tests resulted in positive predictive values of 88%, 100% and 64%, respectively. Using Abbott’s specificity for West Africa lowers the PPV to 68%. Negative predictive values were 100% for all three tests.\(^\text{181}\)

For confirmatory HIV testing, the following rapid tests were used: Morwell HIV 1/2 Rapid Test\(^\circ\), Standard Diagnostics HIV-1/2 3.0\(^\circ\), Gaifar Instant Screen\(^\circ\), Abbott Determine\(^\circ\), Biorad Genie 2\(^\circ\) and Medmira Reveal\(^\circ\). For the Standard Diagnostics and the Morwell tests, only the product insert was available for sensitivity/specificity data and no confidence intervals were given. Both manufacturers stated a specificity of 99.8% and a sensitivity of 100%. The CDC has also evaluated the Biorad Genie II assay which had the same specificity and sensitivity (this was the only data found for this assay). The values for these three tests result in positive predictive values of 96% and 100% negative predictive values under the previously mentioned conditions.

All of the aforementioned rapid assays also include HIV-2 antigens and are able to detect that strain of HIV\(^\text{182}\). This is relevant given the prevalence of HIV-2 and HIV-1/HIV-2 infections present in Ghana.

At all facilities that used an external laboratory, the counselors stated that results were obtained within between one and seven days. The most commonly stated turnaround time for a confirmatory result was three days (N=13). Seven days was the longest estimated turnaround time for a result (N=3). Eight sites used rapid tests for screening and confirmation and could therefore give same-day results for both negative and positive patients.

Counselors were also asked to estimate the return rate of clients coming back or receiving their results. 72.7% estimated that 90-100% return. No correlations could be made regarding the use of rapid tests and higher return rates due to the large confidence intervals. Four facilities (12.9%, 95 CI: 6.9, 18.9; \textit{Fisher exact test} \(p=0.038\)) estimated a lower return rate than “90-100%” and at two sites using external labs, counselors gave discrepant answers.

\(^{181}\) using the following formulas (source: WHO, 2002):

\[ PPV = \frac{[\text{prevalence}](\text{sensitivity})}{[\text{prevalence}](\text{sensitivity})+(1-\text{prevalence})(1-\text{specificity})} \]

\[ NPV = \frac{[(1-\text{prevalence})\text{specificity}]}{[(1-\text{prevalence})\text{specificity}]+(\text{prevalence})(1-\text{sensitivity})} \]

\(^{182}\) From product inserts for tests
Relative VCT Index based on findings and national guidelines

Utilizing the aforementioned data and results, a quantitative index was generated based on the national guideline requirements and 11 basic points drawn from that document and given the corresponding scoring:

<table>
<thead>
<tr>
<th>Question</th>
<th>Scoring</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is informed consent taken?</td>
<td>2-yes, 1-sometimes, 0-no</td>
</tr>
<tr>
<td>Are there signed consent forms?</td>
<td>1-yes, 0-no</td>
</tr>
<tr>
<td>Is pre-test counseling offered?</td>
<td>2-yes, 1-sometimes, 0-no</td>
</tr>
<tr>
<td>Is post-test counseling offered?</td>
<td>2-yes, 1-sometimes, 0-no</td>
</tr>
<tr>
<td>Is there a private room for counseling?</td>
<td>2-yes, 1-somewhat, 0-no</td>
</tr>
<tr>
<td>Is anonymous testing available?</td>
<td>1-yes, 0-no or discrepancy</td>
</tr>
<tr>
<td>Is the window period discussed when required?</td>
<td>1-yes, 0-no or sometimes</td>
</tr>
</tbody>
</table>

*an exception is made for the private sector who would not realistically offer free testing.*

<table>
<thead>
<tr>
<th>Question</th>
<th>Scoring</th>
</tr>
</thead>
<tbody>
<tr>
<td>Who performs the testing?</td>
<td>1-lab tech or trained individual, 0-untrained</td>
</tr>
<tr>
<td>Are results given on the same day?</td>
<td>2-yes, 1-yes for negatives, but not positives, 0-no</td>
</tr>
<tr>
<td>Is confirmatory testing done?</td>
<td>1-yes, 0-no</td>
</tr>
</tbody>
</table>

The points assessed are taken directly from the government of Ghana recommendations which were a collaborative effort made in partnership with other organizations such as the WHO, UNAIDS and FHI. These 11 aspects were chosen because they were issues directly referred to in the national VCT guidelines, applicable at all HIV testing sites and addressed in the questionnaire. A perfect score where all of the criteria were found to be fulfilled through the interviews and/or direct observation would be 17. Applying this index to the 33 sites gives the following results:
Due to the limited sample size, no test of significance could be performed and these results reflect the sample taken and their compliance with the guidelines rather than generalizeable findings. Nonetheless, subgroups are included for descriptive purposes and 100% of the NGOs and public sector was surveyed, thus closely reflecting the actual situation for those sectors. NGOs in this study’s sample performed with higher compliance than the laboratories surveyed. Of the eight laboratories, there were two distinct groupings with five that were less compliant than the others. The average score overall was 11.9. Excluding NGOs, average scores
among the sector subgroups were not distinct enough to make any qualitative comparative statements. Hospitals and clinics on average scored slightly more than laboratories, though the two groupings of laboratories distort this qualitative difference somewhat. Some labs were very compliant.

X. Discussion

The overall objective of the study was to explore and describe HIV voluntary testing and counseling services and examine the use of HIV rapid tests in the Accra Metro District, Ghana. These results could then be contrasted to guidelines recently established by the Ghana Health Services and some additional recommendations made by UNAIDS and the WHO.

Limitations of the Study

The most significant limitations of this study were selection bias caused by quota, or purposive, sampling, which was based in part upon non-probability sampling along with small sample sizes, particularly with respect to the private sector subset. As the number of public sites and NGOs involved in HIV testing within the district was not excessive, 100% were included, whereas, due to the large number of private sites, a systematic randomized sample of private hospital, clinics and laboratories by sub-district was taken based on feasibility. Therefore, the results of the study should not be assumed to be representative of other urban districts within or outside of Ghana. The small sample size of the private sector also limits the ability of the results to reflect differences between the sectors, though differences and p-values are shown for descriptive purposes of the sample that may suggest tendencies and serve a hypothesis-generating function for future research questions.

Observer bias was also an issue minimized through the use of structured interviews based upon a questionnaire composed primarily of closed questions. The data depended at times upon estimations made by the interviewees that may not have offered a completely accurate picture. Therefore, it was attempted to perform two interviews with two different individuals per site to increase the reliability of the data collected at each site and when possible, to make direct observations. It was also emphasized to the respondents that the interview would be anonymous and
confidential and that truthful answers would be of the most benefit to both the facility and the NACP.

Measurement bias may have also affected the results of the study through biased answers given in the interviews. These interviews, based upon pre-tested questionnaires, were done in the presence of a researcher and their results relied upon the respondents’ understanding of the questions and the frankness of their responses, which may have been influenced by the presence of the interviewer. The interviewees were primarily counselors, healthcare workers or laboratory technologists. This may have biased the results in favor of the institution, as these individuals might have wanted to put the “best face” possible on their facility, leading to results that illustrated a “better-case scenario” than is actually present. It was therefore attempted to minimize these biases by ensuring that the interviewees clearly understood the purpose of the study, that the researcher did not work for the government, although the study had been approved by the appropriate authorities, including the director of that facility (but that specific responses would not be shared with them); it was also ensured that sufficient time was allowed for each interview and that the data collected would be kept strictly confidential. Carrying out the interview one-on-one in a closed and private room or other secluded area away from other people further facilitated confidentiality and the giving of interviewee names was optional. It was also stressed that this was not an evaluation and, in addition to all answers remaining confidential (to all, including the facility’s director), the study attempted describe the current status of HIV voluntary counseling and testing within the district that could be useful for determining future needs of the VCT sites. Therefore, it was emphasized that truthful answers were essential in contributing to an accurate and useful description. Recall bias may also have been a factor, though this was reduced by conducting two interviews per site and comparing answers. Additionally, the interviews were conducted in English. Though this is the working language in Ghana, particularly in the larger cities, it is not the exclusive language in Accra and for some it is not the mother tongue. The interviewees were asked if they were fluent in English prior to the interview.

Relating to measurement bias, there were also issues regarding instrumentation bias. The questionnaire was pre-tested at a private clinic to ensure acceptability of the research tool to help minimize this bias and thereby increase the reliability. Two interviewers performed the interviews: the principal investigator was a
non-Ghanaian and the research assistant was a Ghanaian. It is possible that this also contributed to *instrumentation bias*.

**VCT provision in the Accra Metro District**

Voluntary HIV testing was available wherever HIV testing was performed with only two exceptions that did not regularly perform testing for VCT. All of the sites performing HIV testing were included in the analysis. Ten facilities performed no *physical* testing, but sent samples to external laboratories and nevertheless served as entry points for HIV testing, offering VCT in practice. Two sites did not provide VCT explicitly, but did not rule out the possibility that such testing had or could occur. These sites illustrate a “grey area” between testing for VCT context and testing as part of a clinical diagnosis. The question of whether the same standards and guidelines applicable to VCT should also be relevant for diagnostic testing is still an open question, as evidenced by the recent discussions on “opt out” testing and the role of informed consent.\(^{183,184}\)

HIV testing was available throughout the district. While extrapolation of sample data suggested that more private sites existed within the district, public facilities and NGOs were utilized more with respect to VCT. Utilization of the sites included in the study was estimated through interviews and logbook reviews at 290 VCT visits per month (this includes only those *tested* between 1/03 and 10/03). No other studies or data regarding specific utilization of VCT in Accra or Ghana have been published. However, VCT coverage in the Africa Region, including Ghana, is estimated at 0.7%, far below the estimated need of 12-14%.\(^{185}\) One 2002 baseline survey found that 72% of respondents in Accra would “be prepared to take an HIV test” and 82% would “recommend a sick family member have an HIV test”, but that 30% of respondents did not know where to get tested for HIV, suggesting a potentially high demand for testing.\(^{186}\) From a subjective assessment of multiple visits to the four NGOs offering

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VCT within the district over three months, waiting rooms were almost always empty, suggesting a higher capacity than the current levels of utilization take advantage of. Amongst the sample, VCT services were provided largely by the public sector and through NGOs in Accra, accounting for about 70% of all testing for VCT in the district in the stated time period from the sites included in the study. The private sector, both clinics or hospitals and laboratories accounted for the other 30%. Also, just over half of the public facilities offered HIV testing and VCT compared to 36% within the private sector. It should be understood however, that the sample size was small and non-random, so these figures may not be representative of the district. These findings do suggest that the public and NGO sectors are more active in voluntary testing provision. This may be advantageous in that monitoring and evaluation of VCT services may be easier to undertake in the public sector.

Furthermore, different types of facilities and sectors providing VCT services illustrated both advantages and disadvantages that are touched upon in the rest of this study. Integrated VCT facilities allowed, to some degree, for increased infrastructure and may contribute to the normalization of the disease within the district. The NGO’s, on the other hand, were all stand-alone sites that had dedicated staff for VCT provision with less infrastructure. Additionally, risks of stigmatization are a consideration with these types of facilities. Nevertheless, with potentially 30% of testing occurring within the private sector, challenges such as maintaining quality standards and ensuring adequate counseling are important considerations.

Fees for HIV testing

One aspect of the accessibility of Accra’s VCT services considered was the cost of testing. Although the subject of fees is not addressed specifically in the national VCT guidelines, they do mention the importance of VCT centers having options available for those who cannot afford to pay as does UNAIDS. Nevertheless, with potentially 30% of testing occurring within the private sector, challenges such as maintaining quality standards and ensuring adequate counseling are important considerations.

Regarding affordability for those in financial need, a number of possibilities existed within the Accra Metro district. NGOs and public facilities cost, on average,  

markedly less than private facilities. Six facilities (19.4%) charged no fee for VCT services at the time of data collection and five sites (18.5%) offered an option for those unable to pay by either exempting or reducing the fee. Essentially one-third of the facilities could offer an alternative to a person wishing to be tested without the funds. None of the private facilities offered fee reductions or exceptions. From this study, however, it is unclear to what degree the population neither was aware of these services and the possibility to receive free testing nor was the number of individuals took advantage of no-fee services investigated. The 2002 Cencosad baseline survey, done in the Accra Central area indicated that some expressed doubts about VCT and its expense (though exact percentages were not given), indicating that cost was an issue.\textsuperscript{191} This is in accordance with the idea that “scarce economic resources and competing priorities” are a barrier to testing in developing countries.\textsuperscript{192} Studies have shown that clients are willing to pay for VCT services if they are affordable.\textsuperscript{193} Further studies would be useful in determining the degree to which fees impact uptake of VCT services with the district.

\textit{External guidelines}

The use of guidelines by service providers offers a possibility of standardizing the quality of care a patient or client receives and may be seen as a rough indicator of quality. The study attempted to assess through the interviews which guidelines, if any, were utilized. A number of guidelines exist and could be potentially used by testing and counseling providers. The most recent national VCT guidelines were in draft form at the time of data collection. As the interviewees were often counselors and generally not the policy-makers or managers, it cannot be assumed that a lack of awareness on the part of the respondents meant that no guidelines were used in a facility’s testing policy. However, it is one indicator of the overall knowledge of the staff of such guidelines and the corresponding standards for the provision of VCT or HIV testing. Interviewees at 57.6% of the facilities carrying out HIV testing stated that no

\textsuperscript{191} Center for Community Studies, Action and Development (2003). \textit{Baseline survey on attitudes and beliefs towards people living with HIV/AIDS in Ga Mashie and Ablekuma (Accra Central)}. February 2003.

\textsuperscript{192} UNAIDS (2002). \textit{Knowledge is power: voluntary HIV counseling and testing in Uganda}. UNAIDS. June 1999 (second reprint: June 2002)

guidelines were used for the practice of VCT. Staff at one-third of the sites did refer to guidelines from a variety of agencies including the NACP, the Ghana AIDS Commission, Family Health International and the Centers for Disease Control, all of whom have published VCT guidelines. All four of the NGOs stated that they used external guidelines for testing and counseling practices, illustrating another qualitative difference of the stand-alone NGO models of VCT delivery in Accra. A minority of both the private and public facilities (25% and 24%, respectively) claimed that external guidelines were used for VCT practices. This data does not definitively indicate that certain guidelines were used or followed in developing testing policies at specific sites, but it does give an indication of the counselor/staff awareness of the existence of such guidelines. The new national VCT implementation guidelines offer an opportunity to begin to standardize best practices of VCT and HIV testing at different sites and within multiple sectors in the Accra Metro district. Whether the broad introduction of these guidelines has an effect on the quality of services will have to be determined.

HIV Counseling

The need for both trained counselors and the offer of both pre- and post-test counseling has been emphasized in both the new national VCT guidelines and numerous UNAIDS and WHO documents.¹⁹⁴,¹⁹⁵ HIV counselors were present and HIV counseling was, in theory, offered at the vast majority (87.9%) of the sites offering HIV testing in accordance with these standards. The four sites with no counselors on staff and not offering counseling were all clinical laboratories. 44.4% of the laboratories surveyed offered counseling with HIV testing, compared with 100% of the NGOs and hospitals / clinics. Although there was a large confidence interval surrounding this value, the difference was determined to be statistically significant using Fisher’s exact test for smaller sample sizes. Though this finding did not imply that all those tested where counselors were present actually received counseling, it did suggest that clinical laboratories in the district may have less desire, capacity or incentive to offer counseling compared to clinics, hospitals and NGOs. Respondents at two of the four labs cited expense and loss of work time for counseling training as primary reasons for not offering counseling. Though private laboratories in Ghana are largely


¹⁹⁵ UNAIDS and WHO (2004). *Policy statement on HIV testing. June 2004*
unregulated, in this sample they only accounted for about 6% of the client-initiated testing.

The importance of pre- and post-test counseling has been addressed by both UNAIDS and the NACP. Counseling objectives have been defined by UNAIDS as preventing HIV transmission and the emotional support of those seeking testing. Regarding HIV counseling, the national guidelines state, “Individual pre- and post-test counseling should be provided to all those requesting VCT” or for “those requiring diagnostic or any other purpose”. A large percentage of respondents answered “no” or “sometimes” to the question, “Is pre-test counseling offered?” Interviewees at 75.8% (N=25) of the sites stated pre-test counseling was offered, including all of the NGOs. At eight facilities, respondents answered with “no” or “sometimes”. These included 15% of the hospitals/clinics as compared to 55.6% of the laboratories. Although the confidence intervals here were quite wide (7.0, 23.0 and 39.0, 72.2, respectively), there was still a margin of difference between the two groups that was significant, suggesting that a large proportion of laboratories do not or cannot meet established standards regarding counseling. Three of the laboratories not offering pre-test counseling stated that informed consent was obtained prior to testing. This is significant in that an absence of pre-test counseling may also imply an absence of true informed consent, where a client or patient has sufficient information surrounding the disease and the testing process to make an informed decision. This touches on an inquiry into the definition and understanding of informed consent on the part of healthcare providers and their clients. Regarding post-test counseling, respondents at hospitals/clinics and NGOs stated this was provided for all individuals tested and receiving results. Laboratories provided post-test counseling in 55.6% of the cases. Both national guidelines and UNAIDS refer to the importance of two sessions of counseling (pre- and post-) as each session has a different emphasis: pre-test counseling deals with basic HIV facts, myths and prevention, a personal risk assessment, the testing process and informed consent; post-test counseling helps clients understand their results and adapt to their sero-status. An absence of one or both of these counseling components constitutes a significant deficiency when compared to the standard model of VCT promoted by Ghana’s ministry of health, UNAIDS and the WHO. For an individual this can translate into a lack of professional

\[196\] Ibid.
care and support. For the larger community, it is a missed intervention opportunity for the prevention of the spread of HIV.

Additionally, staff at 87.9% (N=29) of the sites stated that counseling regarding the “window period” was done for those testing negative and at increased risk. At three laboratories (9.1%), staff stated the topic was not or only sometimes raised. The national guidelines here state that “clients who test negative but have had recent (less than six months) risky behavior or known exposure to HIV should be encouraged to return for additional testing within three months”.198

UNAIDS has also emphasized the importance of ongoing counseling for helping “people cope with their emotional response and prevent serious or long-term intractable problems”.199 The national guidelines accordingly recommend “VCT sites should have an ‘open door’ policy for their clients for ongoing supportive counseling”. At 60.6% (N=20) of the facilities surveyed, respondents stated that ongoing counseling was offered. Among the 13 facilities not offering ongoing counseling were the eight laboratories surveyed along with three private clinics and two hospitals that gave discrepant answers. Additionally, at all but one of these facilities, respondents said an adequate referral system was in place to address services not offered at that site. All ten of these sites stated they referred HIV positive persons to Korle Bu teaching hospital (which has a large HIV counseling department) and/or the Wisdom Association (an NGO offering support for PLWHA). At one of these thirteen sites, no referral system was in place. Counselors at two of the thirteen sites not offering ongoing counseling/psychosocial services gave discrepant answers regarding a referral system. In conclusion, respondents at almost all of the sites stated they either offered or adequately referred for ongoing counseling. What was not clear from this study and would be of interest in future studies was how much ongoing counseling services are utilized in the district.

Among the sample population, the individual performing counseling generally came from a medical background with nurses providing the most HIV counseling (48.5%). Trained HIV counselors from other professions provided counseling in 15.2% of the facilities surveyed. Laboratory technologists provided counseling at 12.1% of the facilities, which were all clinical laboratories. Doctors provided counseling at very

198 Ibid.
few of the sites (6%). The persons performing counseling was always in accordance with national guidelines. In all of the cases where trained counselors came from other professions, the sites were NGOs. All persons performing counseling with the exception of medical doctors had stated they had undertaken counseling training courses, though this was not independently confirmed. In no cases did persons living with HIV/AIDS perform counseling as is suggested in the national guidelines200.

One additional finding of interest regarding counseling was that 18.2% of HIV testing sites had instituted a standardized checklist or protocol for counseling. Though not a specific recommendation from the national guidelines, a checklist such as those supplied in the UNAIDS’ 

Tools for evaluating VCT could be associated with higher consistency in counseling content. All of the NGOs and two hospitals utilized a checklist again suggesting a higher degree of quality or standardization amongst the NGOs. However, further studies on the quality of counseling services would be required to make any definitive statements.

In summary, the overall presence of counselors and the theoretical offer of counseling with testing was good, though deficits were present, particularly amongst some private laboratories with an absence of counselors and with other facilities through a lack of a consistent offer of counseling with testing. Further quality assurance measures ensuring adequate HIV counseling are warranted and might include increased counselor trainings (particularly for private laboratories or private sector), accreditation measures for VCT providers or, as recommended by the national guidelines, client exit surveys and “mystery client” surveys where individuals are hired to go through the VCT process and report their experiences.

Privacy, informed consent and confidentiality

UNAIDS states that privacy is an essential component of effective VCT in that it facilitates an open discussion on topics such as sexual relationships and risk factors.201 This requirement is also clearly stated in the national guidelines that suggest that counseling rooms be “private, quiet, well lit and ventilated”202. The privacy of the counseling room was therefore assessed through the interview and

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direct observation. Only the presence of a counseling room and the degree of its privacy was evaluated.

There was a significant deficit in terms of privacy throughout the district. Of the facilities with counseling, 75.9% (N=22) offered a private counseling room. At two sites, no private area was available and privacy was not assured. In five cases, the space allocated for counseling was “somewhat” private, meaning for example, that individuals could pass through during counseling sessions, two counselors shared one undivided counseling space or the space was divided in such a way that clients could hear other sessions (e.g. with a curtain). A response of “no” meant there was no designated space (private or otherwise) allocated for counseling. All of the sites sampled offering no privacy or a somewhat private space were public facilities, Though this finding was not statistically significant, it does suggest a tendency of public facilities to be less private. However, all seven of the sites offering less-than-private counseling spaces were hospitals / clinics and this finding was statistically significant when compared to other types of facilities (NGOs and laboratories) that had private rooms available for counseling. The primary reason for a lack of privacy was a lack of space. With 24% of the sites surveyed having an open or somewhat private counseling area, the data suggests some discrepancy with both UNAIDS and national guidelines. A non-private counseling space negatively impacts the acceptability of VCT, prevents true confidentiality and may cause clients to understate risks and withhold information in the counseling sessions.203

As HIV continues to be a stigmatizing disease, confidentiality remains an essential aspect affecting the uptake of services.204,205 As discussed in the preceding paragraph, privacy is one prerequisite and as such, must be significantly improved before true confidentiality can be ensured. Staff guidance on confidentiality is also an indirect factor in the level of confidentiality at a given facility.206 Respondents in 31 cases (93.9%) stated counselors and staff had been given guidance on the importance of confidentiality with respect to HIV. In two cases (one public hospital and one private laboratory), staff indicated that this was not the case and that discussions and guidance surrounding confidentiality had not taken place. The quality and impact

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206 Ibid.
of the guidance given was not assessed nor has any study been published at the time of writing. However, from this finding it can be concluded that amongst respondents (most of whom were counselors), there is an awareness of the importance of confidentiality in the provider-client relationship. Further investigations into the standard of confidentiality within HIV testing centers in Accra would be of interest, covering such areas as how confidentiality is practically and sufficiently ensured and staff understanding of the concept of confidentiality.

Informed consent has been long established as an essential component of HIV testing involving an individual’s informed, autonomous decision to learn their HIV serostatus. The national guidelines state “informed consent must be given special attention” and that “consent forms must be signed or thumb-printed...before testing”.

Facilities existed within the district where HIV testing (for all contexts) was performed without proper informed consent. Only seven facilities (21.2%) in the district had an informed consent form, including all of the NGOs, compared with 8.3% of private facilities and 11.8% of public facilities. These differences were statistically significant, indicating that on this point, NGOs performed more often in accordance with guidelines than other types of facilities. However, absence of a consent form did not necessarily mean the absence of consent and in many cases counselors stated that informed consent was taken verbally. 78.8% stated that no written informed consent form existed, but all of these respondents claimed that, in general, an attempt to obtain verbal consent was made prior to testing. UNAIDS considers informed consent a minimum standard for HIV testing, but makes no distinction between verbal and written consent. A significant number of cases were also found where interviewees stated that HIV testing was performed without informed consent. Counselors and/or staff at ten facilities (30.3%), including 45% of the hospitals / clinics, stated that HIV testing was undertaken at times without informed consent. Staff at one NGO (25%) also stated this, though the size of the subset was too small and confidence intervals too large to make any concluding remarks in this regard. No differences were observed regarding the absence of informed consent and whether

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207 WHO (2002). *Increasing access to HIV testing and counseling*. November 2002
the facility was public, private or an NGO. Six of the ten facilities performed HIV
testing primarily for clinical diagnosis. At all ten of the sites, interviewees stated that
testing had been done without informed consent for reasons of clinical diagnosis. To
reiterate the position of the national guidelines: “When testing is for diagnostic
purposes, it is recommended that all efforts be made to ensure that clients understand
that an HIV test is to be performed. Although clients may not request a test
themselves, similar procedures for pre-test counseling should be followed. Those who
refuse to accept a test…should give informed dissent and their decision…should be
respected.” As described in the results section, two counselors in separate
interviews at one major HIV testing center gave more specific details stating that an
estimated 5% of those tested (total of about 200 per month for diagnostic testing)
receive pre-test counseling and therefore are able to give informed consent. The
findings here suggest that HIV testing without consent occurs and often falls into the
area of testing for clinical diagnosis, though this was not independently confirmed. The
frequency of testing without consent cannot accurately be determined from this
study’s data. In any case, testing with an absence of consent would contradict the
national guideline and WHO/UNAIDS recommendations. There is however still
ongoing discussion surrounding the concept of opt-out testing, where “routine testing”
is regularly performed and consent and pre-test counseling would not be required as
long as the patient understood it would be included in the services received and would
be “analogous to blood pressure monitoring or syphilis screening”. Clients would be
able to decline testing if they wished. Csete et al. argue that women and girls would
be tested more often than males since they have more contact with health services
and protective measures must be funded and implemented in parallel to protect HIV-
positive females. Additionally, as discussed above, there have been findings that
suggest clients are not well enough informed to make an informed decision regarding
HIV testing. Again, no studies regarding the extent and frequency of testing without
informed consent have been published. Additionally, the degree of understanding of

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216 see Abdool KQ and Sastry J studies
voluntary, informed consent of those being tested in all contexts within the district has to date not been evaluated and could be an area of interest for future research.

HIV testing: rapid test use

The use of rapid tests is recommended by the WHO and UNAIDS and, as has been suggested, their use is widespread in developing countries and the Accra district in Ghana is no exception.\textsuperscript{217,218,219} The use of rapid assays conforms to the government’s recommendation that “rapid, whole blood tests be used as much as possible”.\textsuperscript{220} Although this recommendation refers to VCT practices, it is clear from this study that rapid test use for clinical diagnosis is also prevalent. Rapid tests were involved in the testing process algorithms directly or indirectly at 100% of the facilities offering HIV testing. Just over half of the sites used them in the HIV screening process which has the added value of offering quick, same-day results for those testing negative (with positive screening results requiring further confirmatory testing). 18.2% (N=6) used them for confirmation testing following an ELISA which would therefore require a client to return on another day for their result, possibly leading to lower return rates and/or lower client satisfaction, though no findings of significance were found in this study’s data. Eight sites (35%) utilized two rapid tests for screening and confirmation testing, allowing these facilities to give results on the same day to both negative and positive clients (barring discrepant results). It is again likely that this would maximize the number of individuals receiving their results along with, in most cases, post-test counseling. If NACP, WHO and UNAIDS recommendations were to be followed, this algorithm would be used at all testing facilities. Furthermore, there were no facilities that used a third different rapid test in cases where discrepancies resulted with the first two, meaning that these individuals would also have to return for their results. Given that tests are in use with lower corresponding positive predictive values, there is a possibility of discordant results. The draft national guidelines, which recommended a third assay, contradicted the most recent WHO guidelines that recommended retesting after six weeks in the case of discrepancies.\textsuperscript{221,222}

\textsuperscript{217} UNAIDS (2000). \textit{Voluntary counseling and testing technical update}. UNAIDS. May 2000
\textsuperscript{218} WHO (2004). \textit{Rapid HIV tests: guidelines for use in HIV testing and counseling services in resource-constrained settings}
\textsuperscript{221} ibid.
Regarding the testing algorithms for HIV, the national guidelines recommend serial testing with a screening assay followed by a second confirmatory assay for positive screening tests and, if necessary, a third assay. Two positive tests, screening and confirmation, indicate a positive result for an HIV infection. One result of this algorithm is that the screening and confirmatory tests’ overall sensitivity is less than either individually by the formula:

\[
\text{Overall sensitivity} = (\text{sensitivity}_{\text{screening}} + \text{sensitivity}_{\text{confirmation}}) - 100\% 
\]

Therefore, it was further recommended that discordant results between the two tests must be rectified with a third, “tie-breaker” test. This is also the algorithm recommended by both the WHO and the CDC\textsuperscript{222,223}. Regarding the specific brands of rapid HIV assays recommended, the guidelines only state that “approved” kits be used. These included Abbott Determine, Standard Diagnostics HIV-1/2, Gaifar Instant Screen and Morwell Diagnostics HIV 1/2. All of the public facilities used one or more of these test brands that were obtained from a central distribution stock. Other brands not yet evaluated by the central laboratory were used within the other sectors. However, all of these apparently had comparable sensitivity and specificity values (by WHO evaluations) with the exception of Medmira Reveal, which performed at with lower sensitivity (97.6%) than the other assays.

The majority of sites utilized a serial testing algorithm. Of the 33 facilities surveyed where HIV testing was undertaken, two sites (6.1%) based an HIV diagnosis on a single rapid screening test (both using Abbott’s Determine) with no confirmation testing for those returning with a positive result. These sites included one private laboratory and one public hospital. At 93.9% (N=31), interviewees stated they performed confirmatory testing. This was confirmed by direct observation in cases where tests were physically present. In the cases where samples were sent to external laboratories for screening (30.3%, N=10) or confirmation (45.5%, N=15), no independent confirmation was made that samples were actually sent. However, all external reference laboratories referred to (N=3) were included in the study and their testing algorithms examined.

\textsuperscript{222} WHO (2004). Rapid HIV tests: guidelines for use in HIV testing and counseling services in resource-constrained settings
\textsuperscript{224} Ibid.
Both the rapid screening tests and confirmatory tests all had high sensitivities, resulting in positive predictive values from 64 to 100% with 3.9% prevalence and negative predictive values of 100%. The lower predictive values illustrate the importance of a confirmatory test in making a diagnosis. To illustrate, two sites that did not perform confirmatory testing both used Abbott Determine to base HIV diagnoses. Together they had tested 230 individuals between January and October 2003, resulting in 55 positive results. With a positive predictive value of 88%, it is possible that up to 6 or 7 individuals from this group had been falsely diagnosed with HIV. Although the national VCT guidelines do not state any specific minimum standards regarding the sensitivity and specificity of rapid HIV tests, all of the rapid tests used at facilities in the study conformed to the minimum standards set out by the WHO at the time. They recommend >99% sensitivity and >95% specificity.\textsuperscript{226} Newer recommendations published in 2004 suggest >99% sensitivity and specificity.\textsuperscript{227} The former minimum specifications result in a PPV of 46% and an NPV of 100% which lay below the resulting PPV and NPV of the least specific and sensitive test found in the district (Medmira Reveal, by WHO results). As mentioned previously, a lower PPV will result in more false-positive results, possibly leading to test discrepancies. One note of caution regarding these minimum standards and the tests in use is that in the lower limits of the confidence intervals, the sensitivity drops below the 99% cut-off and in the case of the Medmira test, both sensitivity and specificity drop below the minimum standards. It is therefore of interest to determine these tests performance to a higher degree of accuracy and to evaluate the performance of tests with lower sensitivities and specificities alone and in combination with the various algorithms used in the future.

HIV testing was performed by laboratory technologists in 97% of the cases. 22 facilities had a technologist on the premises. The ten sites that used external laboratories had no testing staff, but trained technologists performed tests done at external labs utilized by those sites. Only one facility (an NGO) had an HIV counselor who performed rapid HIV tests. This counselor had gone through a one-week training for performing rapid HIV tests and stated that she had not had any difficulties or problems with the process. The national guidelines state that it is “preferable that all

\textsuperscript{227} WHO (2004). Rapid HIV tests: guidelines for use in HIV testing and counseling services in resource-constrained settings
HIV testing be done by a laboratory technologist”. However, “in some settings, if properly trained and supervised by a laboratory technologist, nurses and counselors may perform simple, rapid tests”\(^{228}\). At the time of data collection (December 2003), a week-long HIV training program took place in which seven HIV counselors took part, indicating that the number of non-technological staff performing HIV testing may increase in the near future. The impact of this (such as higher quality service through shorter waiting times, etc.) will have to be determined.

**Additional services surrounding HIV testing: referrals, treatment, PMTCT, condom distribution and anonymous testing**

A number of points were assessed here. Aspects relevant to the national VCT guidelines specifically included the presence of a referral system and availability of anonymous testing. In addition to this, the study briefly assessed a number of other areas including: access at each site to HIV treatment (ARVs), the treatment of HIV-related health problems (e.g. OIs), the presence of PMTCT interventions (e.g. Single-dose Nevirapine therapy), the distribution of condoms, involvement in community outreach and the presence of additional services.

A referral system was in place at most sites with 29 facilities offering referrals for access to services not offered. Respondents at these sites were able to describe where HIV-positive individuals were referred. Two sites offered extensive multiple services and the need for referrals was limited. Counselors at one of these facilities stated referrals took place only for those who could not afford the services. Another counselor at the second facility stated referrals took place for PMTCT therapy. Staff at two sites claimed that no referrals were made. One was a private laboratory and the other a public children’s hospital. Regarding referrals, the national guidelines state that “it is the responsibility of the counselor to know of and to mobilize additional services to meet the needs of the client” and that they “need to be clear about what services they are able to offer and what limitations they have”\(^{229}\). Respondents’ answers to the questions of referrals suggests that at most facilities, staff are adequately informed to make referrals for needed services.

The WHO estimates that 52,000 people will need ARV therapy in Ghana in 2005. As Accra Metro constitutes 9% of the population with one of the highest

\(^{228}\) Ibid.
\(^{229}\) Ibid.
nationwide HIV prevalence, it can be assumed there is a significant need for ARVs within the district, though no specific district level data on ARV need could be found. In 2003, the Ghanaian government supplied treatment for 716 people throughout the country.\textsuperscript{230} Within this context, at each facility where HIV testing was available, a determination was made as to whether ARV therapy was also accessible. At seven sites counselors stated that access to HAART therapy for the treatment of HIV had been (or, in one case, would be offered within the year) under certain circumstances. Three of the facilities were private hospitals. One organization and two public hospitals said access to the treatment existed but depended upon the client’s ability to pay for the treatment. The numbers of patients receiving treatment was not estimated overall. However, one large public hospital was in the enrollment phase of a new treatment program. Interviews with two doctors involved there established that an initial 50 patients had been enrolled for HAART treatment beginning in December 2003. The national guidelines make no specific reference to HIV treatment and briefly mention HIV-positive persons “getting early treatment for ill health” in the section on post-test counseling. However, access to treatment is seen as synergistically linked to prevention interventions such as VCT such that availability of the former will increase demand for the latter.\textsuperscript{231,232} Whether this will be the case in the Accra Metro District as the availability of ARV therapy increases will have to be assessed in the future.

Treatment availability for other HIV-related health problems such as opportunistic infections was also evaluated and found at 60.6\% (N=20) of the sites. Not unexpectedly, of the thirteen not offering any HIV-related treatment services, 9 were laboratories. There were also two NGOs and two private hospitals/clinics. Counselors / staff at all of these sites with the exception of one laboratory had stated that a referral system was in place to facilitate access to services not offered for those testing positive suggesting that access to care for HIV-related health problems is in principle available to most individuals being tested.

VCT is the first step in the prevention of HIV transmission between mother and child. The national guidelines do not go into details regarding the provision of ARV regimens in the context of PMTCT services. However, these services are discussed in the framework of consent, confidentiality and essential support for women. As short-

\textsuperscript{230} WHO (2004). \textit{Summary country profile for HIV/AIDS treatment scale-up}. June 2004

\textsuperscript{231} WHO (2003). \textit{Accelerating HIV prevention in the context of 3 by 5}

\textsuperscript{232} Médecins sans Frontières South Africa (2003). \textit{Antiretroviral therapy in primary health care: experience of the Khayelitsha programme in South Africa}. WHO July 2003
course Nevirapine, Zidovudine and Zidovudine/Lamivudine regimens have been recommended by UNAIDS and WHO for PMTCT purposes, it was of interest to see how many of the VCT facilities visited were offering a PMTCT option for clients or patients.\textsuperscript{233,234} Out of the VCT facilities surveyed, the facilities offering PMTCT services using one of the aforementioned regimens, was apparently limited within the district, with counselors at three facilities (9.1\%) stating that these prevention services (all offering single-dose Nevirapine\textsuperscript{®} therapy for mother and child) existed. Two of the sites offering PMTCT were private hospitals where it was a fee-for-service program and one was a public hospital that was in the beginning phase of a new PMTCT program. Some facilities referred cases to the Agomanya in the Eastern Region where a PMTCT project run in partnership with Family Health International was established and underway. However, this project was roughly 250 km outside of Accra, greatly limiting access. The number of mother-infant recipients of the Nevirapine regimen was not established.

One other finding of interest relating to both PMTCT and counseling was the recommendations given by counselors for infant feeding for HIV-positive mothers. This question resulted in a spectrum of answers (see Table 14), perhaps indicating of an overall lack of clarity amongst counselors surrounding the different overall transmission rates for varied breastfeeding time spans.\textsuperscript{235} Counselors at five facilities gave discrepant answers within their facilities regarding recommended feeding methods. Although the quality of the counseling services was not within the scope of this study, these findings are included as additional data perhaps relevant for generating hypotheses for future studies regarding the quality, standardization and consistency of PMTCT counseling and/or HIV counseling in general within the district.

Anonymous HIV testing has the potential benefit of increasing VCT uptake. The availability of anonymous testing is recommended in the national guidelines, which state: “It is recommended that anonymous VCT services be available, even within health facilities.” However, it also states that for reasons of referral, “it may be in the best interest of the client for the name to be taken” and that shared confidentiality may

\textsuperscript{234} Guay L, Musoke P (Eds.) (2001). \textit{Prevention of mother-to-child transmission of HIV-1}
Boehringer Ingelheim International 2001
\textsuperscript{235} WHO (2001). \textit{Breastfeeding and replacement feeding practices in the context of mother-to-child transmission of HIV}
be sometimes required\textsuperscript{236}. UNAIDS has also made recommendations regarding anonymous testing, stating that “anonymity and protection of confidentiality are critical to ensure public trust in and demand for VCT”\textsuperscript{237}. Anonymous testing was available at seven sites and 23 sites stated they would not test without a name and/or contact information. Common reasons given by the interviewees for not offering anonymous testing were the need to conduct follow-up and a lack of demand for such services. While studies in the U.S. have shown that demand increases with the availability of anonymous testing, it is unclear if demand for VCT would increase within the Accra Metro district with the increased availability of anonymous testing is an open question.

Given the cost-effectiveness and impact on HIV prevention of condom distribution programs, only half of the HIV testing centers was found to have regularly distributed condoms to clients. However, no specific recommendations stated that condoms should be sold or given out in the national VCT guidelines. Of the sites that did not distribute or sell condoms there were three public hospitals, four private hospitals/clinics and all nine of the laboratories. All of the NGOs distributed condoms to clients. Reasons for not distributing condoms were not assessed. Increasing the number of facilities providing VCT that also distribute condoms may increase the numbers of people using condoms, in turn potentially reducing the number of HIV transmissions in the district.

\textit{VCT services and national guidelines: an index}

A simple index was generated with 11 indicators derived from the guidelines from the national guidelines and an evaluation of each site’s compliance was scored with a maximum of 17 points. The limitations of this index parallel the study’s limitations in that the information was gathered from two staff members, generally HIV counselors, with some direct observations. Although it was attempted to minimize bias, this could be considered a best-case scenario if the assumption is made that interviewees tried to put the best “face” on their institute. These indicators are by no means qualitative in the sense that they do not give an indication of the quality of, for example, the counseling or whether stated services (e.g. fee exceptions, anonymous testing, proper confirmatory testing, etc) are delivered in every case. Each point

\textsuperscript{237} UNAIDS (2002). Knowledge is power: \textit{Voluntary HIV counseling and testing in Uganda.} UNAIDS. June 1999 (second reprint: June 2002)

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indicates simply whether the condition exists at the facility and should serve as baseline data. Due to the limited sample sizes and >6 degrees of freedom in the table, no exact test could be performed. Hence, the scoring is useful only in looking at the results of the sample taken to assess the relative fulfillment of criteria set out in the guidelines and statistical significance is unclear. Additionally it can be seen as one general indicator of the feasibility of the guideline’s implementation within the district. However, the index should not be used to draw generalized conclusions and the sub-categories serve descriptive purposes. Further studies would be necessary to make more qualitative or generalizeable determinations.

In this sample, the NGO’s seemed to fulfill more criteria than the laboratories with an average of 15 compared to 9.6. This was evident again in looking at public, private and NGO’s with average scores of 11.6, 11.5 and 15 respectively, with no difference in scoring between the public and private sites. The NGO’s as a group scored better than both the private and public institutions, as well as better than hospitals, clinics and laboratories. This could be reflective of better funding, less bureaucracy or more direct oversight. However, further studies would be required to discern if the difference was real and if so, what the underlying reasons were. The hospitals and clinics scores ranged from nine to 15, reflecting a spectrum of qualitative differences elaborated on previously. Laboratories fell into two general groups, one higher scoring group with 13 or 14 and a lower scoring group from five to seven.

Taking into account these 11 criteria, the results suggest that the guidelines are feasible for testing centers offering VCT within the district. Obviously, the indicators do not measure every aspect of the guidelines. However, in looking at the selected factors, 30% fulfilled most of the criteria, ending with scores of 14 or more.

**XI. Conclusions**

The principle objective of this study was to describe HIV voluntary testing and counseling services in the Accra Metro District, in parallel paying special attention to the use of rapid HIV diagnostic assays. A survey of 79 potential sites of HIV testing for VCT and interviews with counselors and staff, as well as direct observations at 31 HIV testing providers throughout the district resulted in a number of findings:

- 41.8% (N=33) of a quota sample of NGOs and public and private hospitals, clinics and laboratories offered HIV testing. Testing contexts (defined as diagnostic (also for PMTCT), voluntary or mandatory) were estimated through the interviews and
varied amongst HIV testing sites. Three sites conducted primarily mandatory testing (e.g. for visas, the military, etc.) and some sites performed almost exclusively diagnostic testing. This study focused on voluntary testing in the context of VCT. Although some facilities provided VCT only rarely, all sites were potential VCT providers. Availability of VCT services was evident in the district and within each sub-district. Excluding the four NGOs that provided HIV testing, in this sample, the public sector provided more VCT services than the private sector. Estimations of the absolute numbers of people tested for VCT in 2003 suggested that NGOs and the public sector provided roughly equal amounts of testing and counseling.

- Respondents at one-third of the HIV testing sites surveyed stated guidelines from NACP, FHI, WHO or the GAC had been used to establish HIV testing and counseling policies.

- Fees have an impact on uptake of VCT and UNAIDS and national guidelines suggest alternatives be available for those not able to pay. In the sample, NGOs were less expensive than public facilities, which were less expensive than private sites. Prices ranged from no fee to €25 (25,000 cedis) with an average fee of €5.30 (53,000 cedis). Options existed at six facilities for individuals who could not afford to pay for testing, though awareness and utilization of these alternatives was not evaluated.

- As a diagnosis of HIV has a tremendous impact on the individual being tested and as testing is an opportunity for prevention education, counseling is well established as an integral element of HIV testing. Counseling was present at most sites (88%) with a counselor, all of whom said they had undertaken counseling training. Nurses provided counseling at half of the sites. The other half used doctors, laboratory technologists or persons from other professions. No persons living with HIV/AIDS provided counseling in the sample. Four laboratories (12%) had no counselor on staff and provided no counseling with HIV testing. This accounted for 40% of the laboratories surveyed. Of the facilities with a counselor, there were eight (24.2%, 95 CI: 16.7, 31.7) at which interviewees stated pre-test counseling was only sometimes offered or not offered. In the population sampled, this was more often at facilities doing more diagnostic or mixed context testing than for VCT. Counselors at a number of facilities had stated that testing without pre-test counseling occurred often in the context of testing for a clinical diagnosis. Where counselors were present, interviewees stated that post-test counseling was always offered when a result was
disclosed. Ongoing counseling was also provided at 60% of the facilities and 90% of those that didn’t offer such services referred clients to an appropriate facility that did.

- The importance of confidentiality and informed consent with respect to HIV testing has also been emphasized in the national guidelines. Findings were somewhat mixed with 35% of hospitals and clinics did not have a private area for counseling. All of these sites were within the public sector. However, testing was almost always performed in a confidential manner. Respondents said staff had been given guidance on HIV and confidentiality in 94% of the cases, though this was not independently confirmed. With the exception of all of the NGOs and three hospitals, most sites had no written policy or document for informed consent. At one NGO and nine hospitals and clinics (30%, 95 CI: 22.3, 38.3), respondents claimed HIV testing was done without informed consent at times, generally for clinical diagnostic reasons.

- A number of HIV testing algorithms were used throughout the district. All but one of the facilities used a laboratory technologist to perform the HIV test (at one site, a counselor performed the test. At the time of data collection, some counselors were then taking courses that would then allow them to do simple, rapid tests). The use of rapid HIV tests was ubiquitous in the district, either in confirmation testing and/or as a screening test. About half of the sites utilized an external lab or ELISA for HIV screening tests. This meant all patients or clients were required to return for a result. 51% performed the screening test on-premises with a rapid test. These facilities give immediate results to those testing negative. Overall, eight facilities (35%) utilized the WHO and MOH-recommended algorithm of two rapid tests that offered same-day results for both positive and negative persons (excluding discrepant results). Seven sites referred to an outside laboratory for confirmatory and/or “tie-breaker” testing, again requiring potential HIV-positive individuals to return another day. Two sites gave a result to patients based on a screening test only with no confirmation testing. With the exception of these two sites that fell outside of the recommended best practices for HIV testing, overall, proper testing algorithms were theoretically in place. Whether individuals being tested always received proper testing remains to be verified. The rapid tests found to be utilized all had sufficient specificity and sensitivity compared to the standards set by the WHO. However, due to positive predictive values, which are sometimes much lower than 100%, confirmation testing for persons testing positive is still essential. This is also recommended in the national VCT guidelines.
• Regarding treatment services, at a number of sites respondents stated HAART treatment for HIV could be offered, though in 6 out of 7 cases, this was non-subsidized and depended upon the patient paying for the entire service. In one case, a public hospital was in the beginning phase of a government-sponsored treatment program. Treatment for other HIV health-related problems was offered at 60% of the sites surveyed. Most facilities (88%) had a referral system in place with interviewees able to list referral sites that offered access to services not available at their testing site.

• There were three facilities that stated PMTCT services involving single-dose regimens were available, one of which was a public hospital. Two other public hospitals were in the beginning phases of setting up PMTCT programs. Relating to both PMTCT and counseling, counselor recommendations on infant feeding and HIV was not consistent between different facilities and in some cases within facilities.

• Regarding anonymous testing, which has been shown to increase uptake in industrialized countries and is recommended in the national guidelines, seven sites (21%) unequivocally offered the service.

• Condoms were distributed at almost half of the facilities offering testing.

• The March 2003 draft of the national VCT guidelines, developed with assistance from the WHO, UNAIDS, FHI, USAID and others, were used as a basis for most of the variables investigated in the study in order to contrast the “field” reality to the recommendations. Recommendations in the guidelines generally paralleled standards established by both the WHO and UNAIDS. The studies findings suggest, given that many facilities, particularly the NGOs, appear to be working within the minimum standards set out for many of the recommendations are feasible. However, it also showed a range of conformity to the guidelines amongst the facilities. As a rough index of each facility’s compliance with the national guidelines, points were given for criteria based on the document and an index score was generated for each facility. All of the NGOs along with some public hospitals and private laboratories fulfilled the most criteria overall. However, laboratories scored on average the lowest, though there were substantial differences between some of the labs. This suggests that some laboratories are not performing HIV testing within the limits of the best practice recommendations set out by the government of Ghana. There was also a large range when looking at the public and private sectors and amongst hospitals, though no large difference could be seen. Some qualitative differences amongst the facilities in the
district are illustrated with this simple index. It is an initial assessment and far from comprehensive, but will hopefully offer some baseline data for use in future studies.
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XIII. Annexes

Annex A: Questionnaire

Note that the size and space here has been condensed from the document's original format.

VCT HIV Testing Survey: Focus on Rapid Assays and Services Accra, Ghana

<table>
<thead>
<tr>
<th>Date</th>
<th>Name (optional)</th>
<th>Position</th>
<th>Organization</th>
</tr>
</thead>
</table>

Organization – General
1. The named organization functions as (check as many as apply):

- [ ] Clinical Laboratory
- [ ] Private clinic / practice
- [ ] Public hospital (including polyclinics)
- [ ] Private hospital
- [ ] Voluntary Counseling and Testing Center
- [ ] Prevention of mother-to-child transmission center
- [ ] Other integrated care center (e.g. TB or Antenatal care center)
- [ ] HIV treatment center
- [ ] Non-governmental organization
- [ ] Governmental organization
- [ ] Other – please specify ____________________________

2. When did the organization begin testing for HIV? ________________ Don’t know
3. How many individuals have been tested for HIV between Jan and Oct 2003? ________________ Don’t know
4. On average, how many rapid HIV tests do you perform daily / weekly? _____/day ____/week Don’t know
5. On average, what percentage of those receiving pre-test counseling are tested? ________% Don’t know
6. On average, what percentage of those tested for HIV receive post-test counseling? ________% Don’t know
7. What percent of patients undergoing HIV testing are confirmed HIV positive? ________% Don’t know

8. About what percentage of all those HIV-tested are: Male ___________ Voluntary:________________
   Female_________ Diagnostic:________________
   Children∞________ Mandatory*:_______________
∞ Children = 14yrs or under *e.g. for military or religious reasons, visas, etc.

9. What percentage of those HIV-positive are:
   Male ___________ Voluntary:________________
   Female_________ Diagnostic:________________
   Children∞________ Mandatory*:_______________
∞ Children = 14yrs or under *e.g. for military or religious reasons, visas, etc.

10. Is there a fee for testing and counseling? Yes / No / Don’t know
10b. If yes, how much? ____________________

11. Is there an option for those unable to pay (e.g. a free day)? Please describe. Yes / No / Don’t know
12. Are external guidelines used for the organizations testing policies? Yes / No / Don’t know

Confidentiality / Informed Consent
13. Is there a written policy or guidelines on confidentiality? (If yes, please attach) Yes / No / Don’t know

14. Is there a written policy or guidelines on informed consent? (If yes, please attach) Yes / No / Don’t know
15. Is testing ever performed without informed consent being given? (if yes, describe) Yes / No / Don’t know
16. Is testing performed in a confidential manner (e.g. in a closed lab, out of sight)? Yes / No / Don’t know
17. Are staff given guidance in the importance of confidentiality in regard to HIV? Yes / No / Don’t know
18. Is anonymous testing available? Yes / No / Don’t know
19. Describe the steps taken to ensure confidentiality:
   ____________________________
Counseling
20. Who performs the counseling?  
☐ Doctor  ☐ Nurse  ☐ Other:  ☐ Trained Counselor  ☐ Volunteer  ☐ Don't know
21a. Is pre-test counseling offered?  
☐ Yes / ☐ No / ☐ Don't know
21b. To a group or to individuals?  
☐ Group / ☐ Individual
22. What topics are covered in pre-test counseling?  
☐ Don't know
23. Is individual post-test counseling offered?  
☐ Yes / ☐ No / ☐ Don't know
24. What topics are covered in post-test counseling (in addition to the test result)?  
☐ Don't know
25. Is a counseling done in a separate room or area to ensure privacy?  
☐ Yes / ☐ No / ☐ Don't know / Somewhat

Testing
26. Please check those that apply to your clinic/organization.
☐ HIV screening test done in clinic (include questions 19 – 31)
☐ HIV confirmation test done in clinic (include questions 19 – 31)
☐ Confirmation or discrepancy HIV testing done at outside laboratory (include questions 19 – 31)
☐ All HIV testing done at outside laboratory (skip questions 19 – 31)
☐ Don't know
☐ Other – describe:
27. Which HIV test(s) do you currently use (check as many as apply)?
☐ ELISA  ☐ Western Blot  ☐ Don't know
28. Who performs the test?
☐ Doctor  ☐ Laboratory assistant  ☐ Nurse  ☐ Counselor  ☐ Volunteer  ☐ Don't know / other:
29. What is the level of training / education of the tester(s)?
☐ University or higher  ☐ Work internship / On the job training  ☐ Laboratory technology program (3 year)
☐ High school  ☐ Don't know  ☐ Don’t know / Other – please specify:
30. Do you have external quality control for HIV testing?  
☐ Yes / ☐ No / ☐ Don’t know
30b. If YES, describe:
31. Describe the HIV testing algorithm/schedule used:  
☐ Don’t know
☐ b. Confirmation test:  ☐ d. Other:
32. Are there any specific reasons for using the aforementioned algorithm/schedule (e.g. taken from guidelines, developed through experience)? Please specify
33. Is a second blood sample drawn for confirmation testing? Yes / No / Don’t know

34. How are discrepant results interpreted / dealt with, particularly if no “tie-breaker” test is available (check any that apply)?

☐ Result given to patient as indeterminate or uncertain
☐ Other result given - please explain:
☐ Sample sent to referral lab
☐ Retested in clinic same day
☐ No result given to patient
☐ Don’t know
☐ Retested at a later date
☐ 3rd Tie-breaker test used
☐ Other – please describe:

35. If confirmation samples are sent to another laboratory, what is the average time interval between sample taking and the patient’s receipt of results?
☐ Don’t know
☐ Less than one week: ____d
☐ 1-2 weeks
☐ more than 2 weeks
☐ more than 1 month

36. If clients must come back on another date to receive results, on average, what percentage return?
☐ Don’t know
☐ under 10%
☐ about 25%
☐ about 50%
☐ about 75%
☐ 90-100%

37. Overall, with respect to rapid HIV tests, I am:
☐ Extremely satisfied
☐ Somewhat satisfied
☐ Unsatisfied
☐ Extremely unsatisfied
☐ Don’t know

38. Please state any major disadvantages you see and/or problems you have had with rapid HIV tests. Please be specific:

39. Please state what you see as major advantages to rapid HIV tests. Please be specific:

Post-Test

40. Are HIV treatment services offered or available to individuals tested HIV positive? Yes / No / Don’t know

40b. If yes, average cost per patient per month: ___

41. Are treatment of other HIV-related problems (e.g. opportunistic infections) offered or available to individuals tested HIV positive? Yes / No / Don’t know

42. For HIV positive mothers, what are the recommendations given regarding breastfeeding or bottle-feeding?

43. For HIV positive mothers, do you offer prevention of mother-to-child transmission (PMTCT) services? Yes / No / Don’t know

44. Are persons testing HIV negative, but with recent risky behavior counseled on retesting in 3 months (i.e. after the “window period”)? Yes / No / Don’t know

45. Are condoms distributed to individuals following testing? Yes / No / Don’t know Free / Purchase

46. Are patients informed about other forms of contraception? Yes / No / Don’t know

46b. Please specify:

Advertising and Promotion of the Services

47. Do you advertise or promote HIV testing services in any way? Yes / No / Don’t know

47b. If YES, describe:

48. Regarding HIV testing and/or prevention, is your organization involved in community outreach (e.g. social marketing, peer education, etc.)? Yes / No / Don’t know

48b. If YES, describe:

Other Linkages

49. Are ongoing counseling or psychosocial services offered to HIV-positive individuals? Yes / No / Don’t know

50. Is a referral system in place to facilitate access to other services for HIV positive persons (i.e. services not available or offered by the organization)? Please describe. Yes / No / Don’t know

51. Are other services offered in connection with the testing center? Yes / No / Don’t know
51b. If yes, please specify:

- [ ] Medical Services
- [ ] Social Services
- [ ] Other Counseling

(check all that apply, otherwise describe:

- [ ] Family Planning
- [ ] Mother-Child Health
- [ ] TB/chest clinic
- [ ] STI services
- [ ] Traditional healing
- [ ] Spiritual/Religious groups
- [ ] Others – please specify: ____________

Email or other contact info for recipient of finished study:

Other information / Observations

- [ ] Location or address
- [ ] Opening days / hours
- [ ] Numbers of Staff

Counselors: ____________________________
Lab Personnel: ________________________
Nursing staff: _________________________
Doctors: ______________________________
Other (specify): _______________________

- [ ] Describe the waiting area – note amenities, enticements
- [ ] Describe the counseling areas; note degree of privacy, closed doors, window coverings, locked files, etc.
- [ ] Describe the testing areas.
- [ ] Signs of universal precaution – gloves, water and soap
- [ ] How is the project funded
Annex B: Letter of Informed Consent – Study Participants

Statement of Informed Consent

Study Participant

I, _____________________, of the institution ____________________________, hereby declare on this date __________________, that I participate voluntarily and without coercion in the following study to be carried out by Mr. Vincent J. Wong (BA, DTMPH) between November 2003 and January 2004:

A Descriptive Study of HIV Testing and Voluntary Counseling and Testing in Accra, Ghana: Focus on Rapid Testing and Associated Services

I understand that information will be obtained through interviews and questionnaires and that the information provided by me will remain strictly confidential, to be used solely for the purposes of the aforementioned study.

I understand that my participation is voluntary and I am free to withdraw my participation, including data provided by me or my agents, from the aforementioned study at any time for any reason, effective immediately upon written or verbal notification of Mr. Wong (the primary investigator).

I understand that upon completion of the study, as a study participant, I may receive a final copy of the study.

_________________________  ___________________________  ___________________________  ___________________________
signed  print name  city  date

_________________________  ___________________________  ___________________________  ___________________________
witness  print name  city  date