



IOM International Organization for Migration



**INTEGRATED BIOLOGICAL AND
BEHAVIOURAL SURVEILLANCE SURVEY (IBBSS)
IN THE COMMERCIAL AGRICULTURAL
SECTOR IN SOUTH AFRICA**

November 2010



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1. ABBREVIATIONS/ACRONYMS

AIDS	Acquired Immunodeficiency Syndrome
ARVs	Antiretrovirals
CDC	Centers for Disease Control and Prevention
CIOMS	Council for International Organizations of Medical Sciences
CI	Confidence Interval
DBS	Dried Blood Spots Tests
DHS	Demographic and Health Survey
GIPA	Greater Involvement of People Living with HIV/AIDS
HIV	Human Immunodeficiency Virus
HIV+	Human Immunodeficiency Virus Positive
IBBSS	Integrated Biological and Behavioural Surveillance Survey
IOM	International Organization for Migration
ISO	International Organization for Standardization
KAPB	Knowledge, Attitude, Practice and Behaviour
NGO	Non-governmental Organization
OR	Odds Ratio
P	P-value
PEP	Post-exposure Prophylaxis
PEPFAR	US President's Emergency Plan for AIDS Relief
PHAMSA	Partnership on HIV and Mobility in Southern Africa
PLWHA	People Living with HIV/AIDS
PMTCT	Prevention of Mother-to-child Transmission
QC	Quality Control
SANAS	South African National Accreditation Services
SOP	Standard Operating Procedures
SAMP	Southern African Migration Project
STIs	Sexually Transmitted Infections
TB	Tuberculosis
UNAIDS	Joint United Nations Programme on HIV/AIDS
USAID	United States Agency for International Development
VCT	Voluntary Counselling and Testing
WHO	World Health Organization

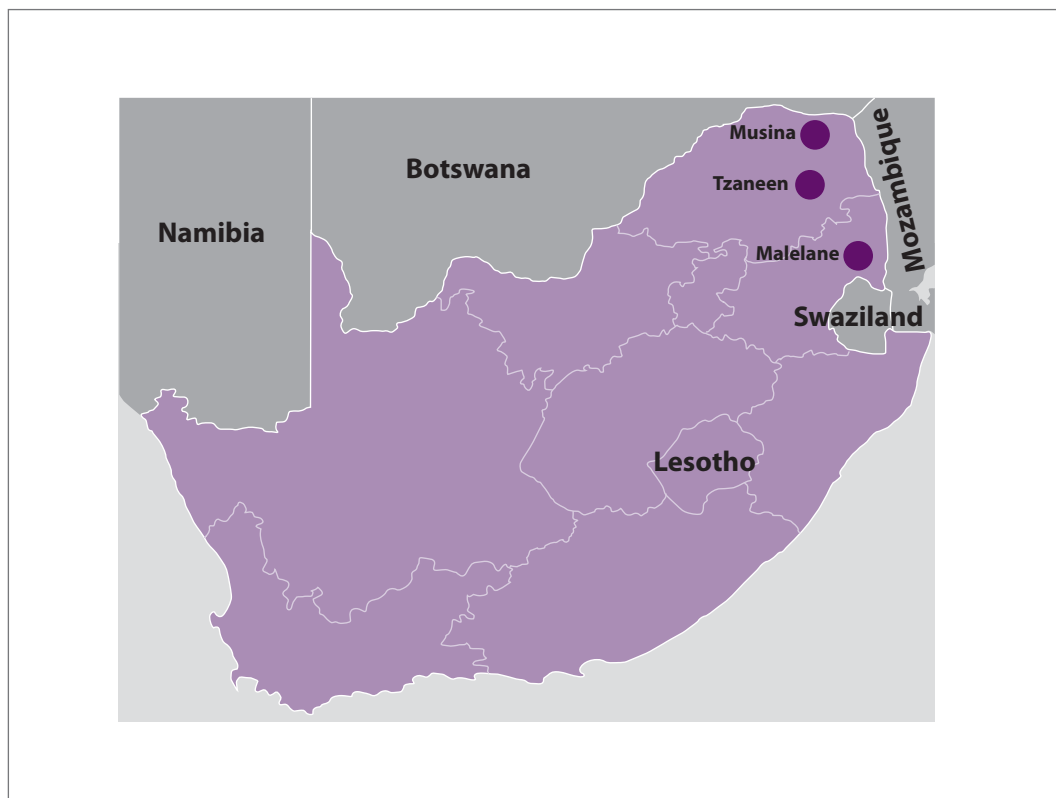
2. EXECUTIVE SUMMARY

2.1 Background

The Partnership on HIV and Mobility in Southern Africa (PHAMSA), which is a programme of the International Organization for Migration (IOM), has an ongoing project targeted at farm workers called the “Ripfumelo Project”. The overall objective of this project is to reduce HIV vulnerability of farm workers in various districts of South Africa by implementing a coordinated, evidenced-based and focused HIV and AIDS prevention and care programme (see Appendix 1 for details of the project).

As one component of this project, IOM contracted Maromi Health Research to conduct an Integrated Biological and Behavioural Surveillance Survey (IBBSS) on participating farms in Mpumalanga and Limpopo provinces from March until May 2010.

The main purpose of this survey was to obtain information on the prevalence of HIV among farm workers and to document their behaviours, perceptions and attitudes regarding HIV-related issues. This information will enable IOM, government and local partners to develop customized HIV prevention, treatment, care and support programmes for farm workers. It also serves as a baseline against which trends over time may be compared. In addition, the findings will be used as an advocacy tool to engage key regional and national stakeholder and decision makers.



2.2 Study Methods

This study comprised of a cross-sectional HIV prevalence, Knowledge, Attitude, Practice and Behaviour (KAPB) survey among farm employees on 23 farms in three areas in the Limpopo Province, and Mpumalanga Provinces, South Africa. It is categorized by UNAIDS/WHO as an “unlinked, anonymous HIV survey with informed consent” (WHO and UNAIDS, 2001). It is “unlinked” in that no HIV result may be traced back to any individual. A sample size of about 2,500 was agreed upon as this would give reasonably accurate estimates of HIV prevalence. Participation was voluntary. Participants had access to free Voluntary Counselling and Testing (VCT) on site (Appendix 4). The selection process was conducted using a cluster sampling approach. Ethical approval for this protocol was obtained from the University of the Witwatersrand (See Appendix 2).

Questionnaires were administered by trained administrators, and nurses used finger pricks to obtain specimens for HIV testing on dry blood spots.

2.3 Results

2.3.1 Population Description

A total of 2,810 individuals employed on farms participated by completing questionnaires and providing dry blood spot specimens. The study used a cluster sampling approach. Over 98 per cent of farm employees from all cluster samples, after hearing an introductory explanation of the study and its objectives, agreed to participate. Just over half of the participants were women (54.4%), virtually all were black and about a third (31.3%) were non-permanent workers. Over 66 per cent of the workers were between the ages of 20 and 39.

In Musina more than 8 out of every 10 employees lived in compounds on farms whereas only around 4 out of every 10 lived in compounds in the other two areas. Farm workers who did not reside in a farm compound tended to stay in their own homes; very few rented accommodation in townships and almost none reported living in informal settlements.

2.3.2 Sexual Risk Behaviours

Over 98 per cent of participants are sexually experienced but about 10 per cent had not had sex in the last year. It is of concern that just over 50 per cent of participants used a condom the last time they had risky sex. Lack of access to condoms is not the problem, as exemplified by the fact that over 80 per cent confirmed that condoms were freely available on the farms.

Also of great concern is that overall 12.8 per cent of males and 14.4 per cent of females were forced to have sex against their will in the last year. Those who reported having been forced to have sex were more likely to be infected with HIV than those who did not (48% versus 39.4%).

Participants from Malelane were almost twice as likely as other participants to report the following occurrences during the last year: more than one sexual partner, being forced against his/her will to have sex, having had sex whilst drunk and experiencing symptoms of a Sexually Transmitted Infection (STI).

Women tend to have partners that are older than them: 69 per cent of those whose partners were 10 or more years older were female. Of the 475 farm workers with partners who were 10 or more years younger, 82.7 per cent were males.

Around one in ten employees engage in “transactional sex” (sex in exchange for money or gifts), with the practice being most common in Malelane. A similar proportion of employees

have traded sex for other benefits such as accommodation, employment and transport, with all these practices being slightly more common in Malelane.

Around two thirds of farm workers never drink and very small proportions drink more than once a week. However, more than a quarter of employees report having been drunk (self-reported) in the last month.

2.3.3. *HIV Prevalence and Associated Risk Factors*

Out of 2,798 participants on whom HIV results were available, 1,106 (39.5%) were HIV positive. More than half of farm workers between 30 and 39 years of age are infected (52.2%).

HIV prevalence is substantially and significantly higher among women in comparison to men. Being married appears to be highly protective against acquiring HIV.

The HIV prevalence was lowest among Zimbabweans while the highest prevalence was found among Swazi workers. With nearly half the workforce living with HIV, Malelane has nearly twice the HIV prevalence of the other two farming communities.

Interestingly, there was no strong association between HIV prevalence or sexual behaviour at the *individual* level. Even when looking at various measures of mobility of the participants, migrants and non-migrants were almost equally likely to be HIV positive and to report risky sexual behaviour.

2.3.4 *General Health of Farm Workers*

In all three farming areas, the bulk of employees perceived themselves to be in generally good health, with three quarters of participants in Malelane stating that their health was good to excellent and slightly higher proportions in the other areas stating the same. Prevalence of HIV is substantially and significantly higher among those employees who perceive their health to be fair or poor.

The study shows that almost 40 per cent of respondents reported a history of genital sores/discharge (with 39.8 per cent of participants reporting having had genital sores and 39.7 per cent reported having unusual genital discharge in the last three months). Tuberculosis (TB) was most commonly self-reported in Malelane (7.8%). This is probably related to the high prevalence of HIV in the area, given the known association of TB with HIV. The rate of co-infection between TB and HIV was also high amongst this population (over 58%).

One in five employees reported chronic back and/or neck pain, making this the most common chronic health complaint. This is perhaps not surprising given the nature of farm work, which involves hard physical labour and repetitive movements. The second most common chronic illness was depression and/or anxiety (13.8%).

2.3.5 *Quality of Life*

Over 80 per cent of employees believe that their work is meaningful and say that they get on well with their colleagues. However, 30 per cent of employees also complain about being harassed or discriminated against in the workplace.

Having the means to ensure a secure food supply for oneself and one's family is a basic human need and yet almost half of farm workers report that they do not always have sufficient money to buy food (most permanent farm workers earn between R800 and R1000 per month [USD 108–135], while seasonal workers are frequently paid less). However, in spite of this situation, about

one third of farm workers are managing to save for their retirement and half have funeral policies. The ability to save was not associated with whether the participant was a permanent or seasonal worker.

The majority of employees feel safe in their homes and slightly fewer at their places of work. The majority also feel supported by partners or families and their jobs give them a sense of self-esteem. However, more than half are either unsure or concerned that they may lose their jobs in the near future. This concern is probably because of the uncertain economic times and reflects the fact that employment in this sector is not secure.

About three quarters of farm employees expressed positive sentiments about levels of community cohesion on the farms and in the general community. However, in spite of this apparent cohesion, it is of concern that nearly half of participants believe that local people treat them as foreigners.

2.3.6 Exposure to HIV/AIDS Programmes and Other Services

The majority of employees (71.7%) have attended a meeting or function about HIV and AIDS on a farm and slightly more have received HIV and AIDS literature on the farm. Condom access is high in all three areas: almost 90 per cent of employees report that they have accessed condoms on the farms. This could be due to the newly initiated HIV prevention and care projects on these farms.

The finding that more than 90 per cent of farm workers say they would report criminal behaviour to the police shows that there is a degree of trust that the police can take effective action. However, half the workers also believe that the police treat foreigners and migrants worse than locals, so their perceptions towards the police are ambivalent.

The data showed that almost all workers believe that they can access HIV treatment from a government clinic, so the sense that foreigners will be discriminated against by the health services is not widespread. Government clinics are also the most commonly used health facility (90%) with only 3.7 per cent claiming to go to private doctors and 4.5 per cent to traditional healers. In all sites the overwhelming majority of employees will seek assistance from management on the farm rather than fellow farm workers.

2.3.7 Knowledge and Attitudes about HIV and AIDS

Most employees know the basics about the transmission of HIV but it is of concern that just over a quarter believe the myth that HIV can be transmitted by mosquitoes. Worryingly, only half know that there are medications that can be taken by rape survivors to prevent HIV infection.

Whilst two thirds of participants in Malelane believe that it is okay to have a “one-night stand”, only one in five believes this in Musina and just over one in ten in Tzaneen. More people in Malelane also report that having more than one partner at a time is acceptable.

Around half of all employees believe that their colleagues would be supportive of them if they disclosed that they were HIV positive. Overall, about 90 per cent of workers indicated that they had accepting attitudes towards people living with HIV (PLWHA).

2.3.8 Comparison with National and Provincial Data

HIV prevalence levels among farm workers from this study were compared with HIV prevalence reported among adults in Limpopo and Mpumalanga provinces using the 2008 National Human Sciences Research Council (HSRC) survey (Shisana et al., 2009). Analysis of the HSRC data was restricted to include only sexually active, black Africans so as to be comparable to the farm

worker data. In both provinces, the HIV prevalence levels among farm workers is around twice that in the general population and these differences are significant. Furthermore, the data shows that farm workers are less likely to use a condom, more likely to have had multiple partners in the last year and more likely to have reported symptoms of STIs in the last year.

2.4 Implications of Results

The prevalence of HIV among the farm workers in this study is the highest published level among an employed population in the region of which the authors are aware. Most other studies of employed populations in the region (e.g. Colvin et al., 2007b) reported that employed people tend to have a lower prevalence than the general population. The opposite is true on these farms, as the workers are much more likely to be HIV positive, compared with those living in the wider districts – sometimes even twice as likely to be HIV positive. For instance, in the Vhembe District the prevalence is 14.7 per cent (Shisana, 2009), whereas the prevalence on the farms in Musina is 28.1 per cent.

This study tried to measure the impact of migration and mobility on HIV status and on sexual practices. In order to determine whether this population was made up of migrant workers (defined as persons who freely choose to move location within a country or across an international boundary for the reasons of “personal convenience” and without intervention of an external compelling factor, IOM, 2004), the study looked at issues such as the frequency with which the participants saw their partner, whether they lived with or apart from their families and whether they were permanent or contract workers.

This study found the following:

1. HIV prevalence is similar among all participants, migrants and non-migrants.
2. All farm workers surveyed seem to be more vulnerable to HIV infection when working on farms in South Africa compared to the general population in the corresponding districts, and therefore commercial farms can be considered to be “spaces of vulnerability”.¹
3. It is not possible to pin-point one factor that is causing this high rate of HIV infection on these farms. Rather, a multitude of factors (such as multiple and concurrent partnerships, transactional sex, irregular condom use, presence of STIs and/or TB, high levels of sexual violence, and others), seem to be the cause of the high HIV prevalence.
4. A large proportion of commercial farm workers are made up of migrants from neighbouring countries. The HIV prevalence amongst farm workers is double and in the case of Mozambique is triple the national average of their countries of origin (national level data in Mozambique shows a 13 per cent HIV prevalence (UNAIDS, 2009), whereas the Mozambicans in this survey showed a 41.5 per cent infection rate. Neighbouring governments need to be made aware of these statistics so that appropriate prevention, care and treatment can be provided to returning nationals and their families.

1 *Space of vulnerability*: The spaces of vulnerability approach is based on an understanding that health vulnerability stems not only from individual but also a range of environmental factors specific to the unique conditions of a location, including the relationship dynamics among mobile and sedentary populations. These factors must be taken into consideration when addressing migration health concerns, and interventions must consider and target both migrants/mobile populations and the communities with which they interact, including families in migrant-sending communities. Spaces of vulnerability are those areas where migrants and mobile populations live, work, pass-through or from which they originate. They may include the following; land border posts, ports, truck stops or hot spots along transport corridors, construction sites, commercial farms, fishing communities, mines, migrant communities and urban informal settlements, migrant-sending sites, detention centers, and emergency settlements (IOM, 2010b).

2.5 Recommendations

Box 1: Top Recommendations

Overall:

Given that these commercial farms can be described as “spaces of vulnerability”, it is important to ensure that government and NGO interventions are targeted not only at the farm workers but also those people with whom they interact.

Regional policy-related recommendations:

1. IOM and other regional stakeholders should advocate for cross-border dialogue on the development of government policies and programmes that would better prepare migrant workers for the health risks and work conditions they will face in neighbouring countries, and devise a concrete plan to ensure proper testing and treatment of HIV positive returning migrants and their families.
2. IOM and other regional stakeholders should advocate for regional policies that are cognisant of the ‘spaces of vulnerability’ approach.
3. At the regional level, SADC should ratify the SADC Draft Policy Framework on Population, Mobility and Communicable Diseases (SADC, 2009).

National policy-related recommendations:

4. Government health policies and programmes should be cognizant of migrants and migration affected communities in order to support more effective health service delivery. For example seasonal workers should be included in district health plans so as to ensure sufficient health resources are available at the local level.

Programme-related recommendations:

5. Test, encourage positive living and treat: Government needs to take measures to increase the uptake of VCT and to facilitate access and adherence to HIV, TB and STI treatment programmes, including Post-exposure prophylaxis (PEP) and Prevention of mother-to-child transmission (PMTCT).
6. Sexual and gender-based violence: Farm supervisors, managers and workers, as well as police and healthcare providers, should be sensitized to sexual and gender-based violence. There is a very strong need to educate farm workers about the availability and effectiveness of PEP.

Research-related recommendations:

7. Spaces of vulnerability: IOM and other stakeholders should conduct more in-depth research on these farms and other ‘spaces of vulnerability’ in order to understand and pin-point the factors that result in these sites becoming “spaces of vulnerability”. This will allow for more targeted and effective programme strategies to reverse and/or lessen the risk of HIV infection for commercial farm workers.

2.6 Other Recommendations

2.6.1 National policy-related recommendations

- Government needs to promote awareness on sexual and gender-based violence in the farms and the surrounding communities, ensure that rape victims have access to authorities to report sexual and domestic violence and ensure access to PEP, regardless of migrant status.
- Government should encourage farm owners to develop and implement workplace policies and programmes that are in line with existing legal frameworks so that support for access to health care is not solely dependent on the goodwill of the farm managers/supervisors.

2.6.2 Programme-related recommendations

- Positive prevention: A programme aimed at reducing HIV transmission for and by HIV positive people should be devised and implemented.
- HIV/AIDS education: Customized and appropriate social and behaviour change programmes should be devised and implemented for and with farm workers and should emphasize issues that impact on sexual practices and behaviours, including sexual and domestic violence, cultural issues, and myths and misconceptions surrounding the transmission of HIV.
- Disseminate information and facilitate dialogue: Government, farm owners and farm workers in this area need to know about the high rate of HIV infection and of sexual violence and find solutions to reduce farm workers' risk to both.
- Invest in evidence-based prevention and care, support and treatment programmes: Although these interventions are needed in all areas, the situation is particularly severe in Malelane and should be made a priority by government.
- Tuberculosis and Sexually Transmitted Infections: The Department of Health needs to be cognisant of and address the high levels of HIV/TB co-infection and of STIs on farms;
- Food Security: IOM should build partnerships with other stakeholders such as the Department of Agriculture and the Department of Social Development to address food security issues amongst this population.
- Alcohol use: IOM should develop interventions on the farms that target binge drinking. One approach would be to introduce alternative forms of alcohol-free entertainment and to provide opportunities for sporting activities.

2.6.3 Research-related recommendations

- Repeat this study: IOM and other stakeholders should use this baseline data to track changes over time. Repeat this study every few years, possibly on a smaller scale and without HIV testing, in order to track trends in knowledge, behaviour and attitudes of farm workers.

3. INTRODUCTION

Research in southern Africa and elsewhere has shown that migrants (Lurie et al., 2003) and farm workers (Colvin et al., 2007a) are particularly vulnerable to HIV. In response to this The Partnership on HIV and Mobility in Southern Africa (PHAMSA), which is a programme of the International Organization for Migration (IOM), has an ongoing project targeting farm workers called the “Ripfumelo Project”. The overall objective is to reduce HIV vulnerability of farm workers in various districts of South Africa by implementing a coordinated, evidenced-based and focused HIV and AIDS prevention and care programme.

As one component of this project, IOM contracted Maromi Health Research to conduct an Integrated Biological and Behavioural Surveillance Survey (IBBSS) on participating farms from March until May 2010.

The main purpose of this survey was to obtain information on the HIV prevalence, behaviours, perceptions and attitudes of farm workers regarding HIV-related issues. This information will enable IOM, government and local partners to develop customized HIV prevention, treatment, care and support programmes for farm workers. Also, if the study is repeated in two or three years time, this current survey will serve as a baseline against which anticipated improvements in risk behaviours and ultimately reduced HIV incidence may be measured. In addition, the findings will be used as an advocacy tool to engage key stakeholder and decision makers at the regional and national levels.

The study is a baseline survey aimed at establishing the epidemiology, including the distribution of HIV and associated risk factors of HIV infection, of farm workers in the Malelane, Musina and Tzaneen areas (including permanent, seasonal and contract workers).



Two Change Agents and coworker, Dur Roi. © IOM 2010 (Photo: Du Roi, Maromi Health Research)

4. MIGRATION, MOBILITY AND HIV

Southern Africa has been severely impacted by the HIV epidemic with five SADC member countries having the highest prevalence in the world. Whilst there is no single explanatory factor for this situation, it is probable that the high levels of migration and mobility throughout the region have played an important role in spreading the virus.

Research confirms that migrants and migrant households and the communities they interact with are particularly at risk. There is a higher rate of HIV infection in “communities of the mobile”, which often include socially, economically and politically marginalized people (IOM, 2008). There are at least three key ways in which mobility is linked to the spread of HIV (IOM and SAMP, 2005).

- 1) Mobility per se can encourage or make people vulnerable to high-risk sexual behaviour.
- 2) Mobility makes people more difficult to reach, whether for prevention education, condom provision, HIV testing, or post-infection treatment and care.
- 3) Migrants’ multi-local social networks create opportunities for sexual networking.

The public perception of migration and HIV is often simplified to the belief that migrants bring the infection into the areas in which they travel. It is this perception that lies at the root of much of the discrimination and xenophobia against migrants. However, the relationship between HIV and mobility is more complex and research shows that it is often the mobile populations that are vulnerable. The very factors that drive mobility – such as poverty, unemployment, social instability, discrimination and exploitation – are also the factors that drive the HIV epidemic.

Separation from family and partners and from the social norms that govern sexual behaviour, being faced with poverty and alienation, and lacking access to information, social and health services all put mobile populations at risk of HIV infection. Population mobility and migration especially contribute to the phenomenon of concurrent sexual partnerships, which is arguably one of the main drivers of the HIV epidemic in southern Africa. Because migrants and mobile workers are regularly separated from their permanent partners, they are more inclined to engage in short- or long-term sexual relations with other partners.

Box 2: Marriages and relationships of farm workers

This extract comes from a series of stories collected in migrant-affected communities (where many migrants are living and working) including farms. This story describes the daily life and challenges faced by many farm workers. This Zimbabwean farm worker gives a description of the difficulties that come with the large amounts of time spent away from spouses:

‘As a man, you can stay [here] for ... three months: after three months I feel I need a woman ... So some they take some [women] to stay with them in order to assist them to carry firewood, to cook for them, to do whatever ... Most of the people they [fall] in love with a South African ... those who live near the farm ... they end of having marriages with those [women] and they forget about their marriage [in] Zimbabwe. [So] it is easy for them to catch a disease here in South Africa and go home and give it to your wife.’

(Zimbabwean farm worker, Musina, 2010)

Recent work on modelling the impact of migration on the HIV epidemic in South Africa (Coffee, 2007) demonstrated that migration primarily influences HIV spread by increasing high-risk sexual behaviour rather than by connecting areas of high and low HIV prevalence. Frequent return of migrants is an important risk factor, particularly when coupled with increased sexual risk behaviour. Indeed, the authors estimate that when these conditions are met, the HIV prevalence increases 10 times among migrants' female partners.

However, Lopman et al. (Lopman, 2007) have noted that whereas earlier in the epidemic mobility was thought to be an important driver of the spread of HIV into rural areas, more recently in rural Manicaland in Zimbabwe, the prevalence of HIV among migrants was no higher than among fellow members in the community. The authors go on to state that in a mature, generalized epidemic such as this, "there is little difference in readily identifiable individual characteristics between those who acquire infection and those who do not". In other words, when the epidemic is generalized throughout the community, the risk of acquiring HIV is not confined to sub-groups but is more evenly spread. Indeed, in this study about 70 per cent of new infections occurred among married men and women among whom reported high-risk behaviours are uncommon.

In recent years, there has been a shift in emphasis away from viewing migrants as "vectors" of disease and towards viewing the entire impacted community – migrants and non-migrants, those who are mobile and those who are not – as vulnerable. Williams et al. (2002) coined the phrase "Spaces of vulnerability" in their article on migration and HIV/AIDS in South Africa to highlight the need to view the situation more holistically. It is the migrants and their home and host communities who are impacted upon by the migration process.

Box 3 "Spaces of vulnerability"

The Spaces of Vulnerability Approach is based on an understanding that health vulnerability stems not only from individual but also a range of environmental factors specific to the unique conditions of a location, including the relationship dynamics among mobile and sedentary populations. These factors must be taken into consideration when addressing Migration Health concerns and interventions must consider and target both migrants/mobile populations as well as the communities they interact with, including families in sending communities. Spaces of vulnerability are those areas where migrants and mobile populations live, work, pass-through or originate from and may include the following; land border posts, ports, truck stops or hot spots along transport corridors, construction sites, commercial farms, fishing communities, mines, migrant communities and urban informal settlements, migrant sending sites, detention centers, and emergency settlements.

(IOM, 2010b)

Finally, providing HIV prevention and treatment services to mobile populations also poses many challenges and, whilst not of much relevance to conducting this survey, these issues had to be considered when designing the questionnaire so that the response is appropriately informed.

5. STUDY PURPOSE

The overall purpose of this study was to obtain baseline information which will enable the development of customized HIV prevention, treatment, care and support programmes for employed populations such as farm workers, their families and the communities within which they interact, Africa. In addition the study findings would add to the body of knowledge on the issue and support advocacy for policy and programme development.

5.1 Study Objectives

- To establish the prevalence and distribution of HIV in the target population;
- To establish prevalence of knowledge, beliefs and perceptions about HIV and other STIs;
- To establish prevalence of key HIV risk behaviours, especially in relation to HIV status and mobility;
- To develop a body of evidence to direct and strengthen the HIV response, including advocacy, programming, service provision and policy.

5.2 Study Methods

5.2.1 Study Design

This study was comprised of a cross-sectional HIV prevalence, Knowledge, Attitude, Practice and Behaviour (KAPB) survey among farm employees on 23 farms in three areas in Limpopo Province, South Africa. It is categorized by UNAIDS/WHO as an “unlinked, anonymous HIV survey with informed consent” (WHO and UNAIDS, 2001). It is “unlinked” in that no HIV result may be traced back to any individual. The study was conducted between March and May 2010. Participation was voluntary. The study was conducted anonymously and no identifying information such as individual identity numbers or employee numbers were obtained from any participant. KAPB survey data was linked to the HIV tests via unique bar codes but it was not possible to link any information back to an individual.

A number of potential challenges to the implementation of this study were identified prior to study implementation and are discussed in Appendix 3.

5.2.2 HIV Testing Strategy

Testing for HIV antibodies may be conducted on various bodily fluids including blood, urine and oral fluids. Over the last decade the research team has used all three substrates but have now use dry blood spots (DBS) as the standard.

The research team prefer using DBS for the following reasons:

1. It is easier to manage logistically because specimens are stable and easy to package, transport and store.
2. It is slightly more reliable than saliva testing.
3. In our experience it has no negative impact on participation rates.

4. In the very near future, we will be able to do HIV incidence testing reliably (as opposed to prevalence testing) on archived specimens.
5. Perhaps most importantly, specimens can be archived for repeat testing should there be any queries about accuracy of results.

In this study the research team obtained DBS from consenting participants. Trained, registered nurses obtained specimens by using “single-use” lancets and placing blood drops onto a Guthrie Card. The cards were linked to the questionnaire by means of a unique barcode.

5.2.3 Study Population

The study population comprised all farm employees (permanent and contract) employed on participating farms in the three study areas, Musina, Tzaneen and Malelane. Note that there was no random sampling of farms; instead all farms who were participating in the Ripfumelo project participated in this study. We are not able to determine whether or not these farms are in any way systematically different from non-participating farms.

5.3 Sampling

5.3.1 Sample Size

The terms of reference for this study contained the following in regard to sample size required:

The survey should ensure that the sample size is sufficient to ensure power to calculate statistically significant findings at 95 per cent confidence interval on the following key indicators:

1. *HIV prevalence among permanent and non-permanent employees on commercial farms in three sites*
2. *condom use at last sexual encounter*
3. *number of sexual partners in the last three months*
4. *prevalence of knowledge and beliefs on HIV and other STIs.*

The population size, based on the size of the workforce in farms participating in the Ripfumelo project, is:

- Tzaneen area: 10 farms are participating with approximately 1,000 employees;
- Malelane area: eight farms are participating with approximately 3,220 employees;
- Musina area: five farms are participating with approximately 1,600 employees.

The indicators 2, 3 and 4 above are all simple frequencies of common variables and hence any sample size sufficient to give a reasonably accurate estimate of the HIV prevalence will also provide accurate estimates of these variables. The sample size was therefore based on the HIV prevalence estimate.

The HIV prevalence measured previously on farm employees in one area was 28.5 per cent (IOM, 2009). The research team assumed that the HIV prevalence among the current study population is 30 per cent and that there is a roughly 50 per cent split in the study population between men and women and that a similar level of accuracy around the HIV prevalence is required for both sexes. Assuming random sampling, a sample size of 1,191 men and 1,191 women (a total sample of 2,382), will give an estimate within 2 per cent of the true prevalence at a 95 per cent confidence level. This is approximately 41 per cent of all employees. Note that the study targeted more workers than 2,382, approximately 3,000, because it was assumed that not everyone targeted would participate and that some samples may get damaged. In the final analysis, HIV results were available for a total of 2,798, as twelve samples were damaged/unreadable.

5.3.2 *Selecting the Sample*

The ideal sampling methodology would have been to obtain a list of all farm employees and to randomly select individuals to participate. However, this approach was not feasible in the farm setting because of logistical and production concerns. Such an approach was also likely to result in concerns about confidentiality if employees were called by name.

Instead, a cluster sampling approach was used. For each participating farm was obtained a list of all employees on the farm along with their site of work (e.g. packing, picking, laboratory, etc). The research team then attempted to sample a proportionate number of employees from each site in order to make up the predetermined sample size for that farm.

Change Agents² – farm workers trained by the Ripfumelo local implementing partners as peer communicators – in consultation with farm managers brought groups of 10 employees at a time to the testing venue. It was constantly stressed to the people responsible for bringing in the groups of employees that they were not to “select” employees themselves, but were to ask batches of 10 workers to come and hear the talk and then decide if they wanted to participate. Those that agreed to participate were given a consent form in the language of their choice to read and sign. For those unable to read, the consent form was read and explained to them and they then had the option to sign or not.

However, the reality is that the study team was seldom able to access the sites from where employees were sourced and so we cannot rule out a degree of self-selection.

2 Change Agents are a key component of the Ripfumelo project and are a group of carefully selected farm workers who undergo training which covers basic understanding of HIV/AIDS and other health problems such as TB and STIs, as well as overall health promotion. Their main role is to facilitate communication within the workplace and create a platform to explore socio-cultural issues that impact on sexual behaviours and practices in the context of HIV that addresses social issues. They are a prototype of the new generation peer educators.

6. QUESTIONNAIRE DEVELOPMENT AND ADMINISTRATION

A questionnaire exploring knowledge, attitudes, practices and beliefs (KAPB) was developed especially for this study. The KAPB module needed to include certain standard indicators that are used in surveys nationally and internationally in order that the results may be compared. In addition, there were project-specific interventions that needed their own indicators.

Questionnaires comprised two sections – section 1 obtained demographic and socioeconomic data while section 2, the KAPB module, obtained data on levels of knowledge, attitudes, practices and behaviour. In addition, a variety of questions pertaining to quality of life issues were also incorporated.

Early drafts of the questionnaire were shared with IOM staff and partners, and changes were made based on comments received. After this, the draft questionnaire was piloted and final corrections made. The questionnaire was then translated into Shona, Ndebele, Venda and Seswati.

Although it would have been ideal for confidentiality reasons and to decrease “social acceptability” bias, for the questionnaires to be self-administered, this was not possible because of the low literacy levels among the study population. Instead, the questionnaires were administered by trained facilitators.

7. LOCAL CAPACITY DEVELOPMENT

Local capacity development on this project was limited to IOM/Ripfumelo partner staff and the approximately 10 questionnaire administrators in each of the three sites. A one-day training workshop was held at each site. The workshop covered questionnaire administration technique and the importance of maintaining a non-judgemental attitude. The group went through the IBBSS questionnaire in detail and the participants spent time administering the questionnaire to each other.

In addition to the workshop, formal debriefing sessions were held at the close of each day to discuss challenges and identify problems.

8. QUALITY ASSURANCE MEASURES

A description of the quality assurance measures taken is included as Appendix 5.

8.1 Data Analysis

All answer sheets were compiled each day and placed into envelopes. On a weekly basis, the questionnaires were couriered to the Epicentre offices in Johannesburg where they were logged by reading the barcodes on each one. From there the questionnaires were sent to a company called CSX for data capture.

The data was then sent to Maromi Health Research from CSX via email. Data was subsequently converted into the STATA (Data Analysis and Statistical Software) package. The HIV prevalence data set was emailed from Global Laboratories and the HIV data was merged with the questionnaire data based on the bar codes. Data cleaning consisted of checking for duplicate records and consistencies within records.

Exploratory data analysis included basic frequency distributions of all variables. The original plan was to generate weighted data but because we could not get the required demographic information (gender, age, race) for each farm, this was not possible.

Risk factor analysis for determinants of HIV prevalence was examined using chi-square tests appropriate for complex survey designs. Risk factors examined included demographic factors, geographical location, field of study, culture as well as factors associated with high-risk behaviour. Tables of weighted prevalence at national and institutional level were presented together with odds ratios and 95 per cent confidence levels.

Since many risk factors for HIV may be inter-related, multiple logistic models of variables significant at the bivariate level and possible confounders were used to identify independent risk factors. Complex models were explored at the national level and where possible at the institutional level. Tables of adjusted odds ratios and 95 per cent confidence intervals are presented in Chapter 14.

8.2 Monitoring and Determining Participation Levels

The greatest risk to the validity of these studies is from non-participation bias. Consequently, emphasis was placed on building the trust of potential participants to ensure that as high a percentage as possible participated.

Because the field team relied on Change Agents and farm management to bring in employees from various parts of the farm, it was not possible to know to what extent self-selection occurred prior to employees arriving at the testing venue. However, we believe that the extent of self-selection was minimal because employees seemed very comfortable to participate and possibly enjoyed the break from routine work that this study offered them. As a token of appreciation for taking part in the study, participants were given a T-shirt. Indeed, one of the major problems faced was from disgruntled, non-sampled employees who wanted to know why they had not been chosen to participate. This seemed to be based on the desire to obtain a T-shirt. Also, it was stressed to those bringing in employees that they should request batches of employees to come rather than select individuals.

When participation was measured as the proportion of those employees who, after attending the introductory talk then completed questionnaires and gave DBS specimens, the participation level in this study was very high. See Table 1. This ensures that the results will not be biased by any non participation.

Table 1: Participation rates based on employees who attended the introductory talk

Site	Sample size	No. attended talk	No. Questionnaires	No. DBS	Participation*
Tzaneen	500	460	455	452	98.3%
Malelane	1 440	1 586	1 586	1 584	99.9%
Musina	700	787	774	774	98.3%
Total	2 640	2 833	2 815	2 810	99.2%

* Based on: (No. DBS/No. Attended talk) x 100

8.3 Ethics Approval

The research team has previously received class ethical approval for our study design from the University of the Witwatersrand (Protocol No.: M060438). Ethical approval for this particular protocol was obtained from the University of the Witwatersrand (Appendix 2).

The methodology used is compatible with all international and national legislation and guidelines including the 2008 CIOMS Guidelines.

In order to be in line with international ethics standards, voluntary counselling and testing (VCT) was provided on the farms for the duration of the study and over 50 per cent of employees (1,400) chose to undergo VCT, of which 30 per cent were HIV positive. A brief report on the VCT component is included as Appendix 4.

Other ethical issues that needed to be addressed included the requirement for total anonymity, confidentiality, appropriate referral for care, obtaining written informed consent and compensation to participants.

9. RESULTS

9.1 Description of Population

A total of 2,810 individuals employed on farms participated by completing questionnaires and providing dry blood spot specimens. Note that not all denominators in the below tables are the same because of variable amounts of missing data.

Table 2: Distribution of demographic factors among farm workers

	Malelane		Musina		Tzaneen		Total	
	No.	%	No.	%	No.	%	No.	%
Sex	1 560		782		455		2 797	
Male	743	47.6	387	49.5	146	32.1	1 276	45.6
Female	817	52.4	395	50.5	309	67.9	1 521	54.4
Race	1 563		783		455		2 801	
Black	1561	99.9	782	99.9	446	98.0	2 789	99.6
Other	2	0.1	1	0.1	9	1.9	12	0.4
Age	1 562		782		450		2 794	
<20	26	1.7	30	3.8	0	0.0	56	2.0
20–29	541	34.6	333	42.6	77	17.1	951	34.0
30–39	482	30.9	253	32.4	166	36.9	901	32.3
40–49	332	21.3	112	14.3	125	27.8	569	20.4
>=50	181	11.6	54	6.9	82	18.2	317	11.4
Marital Status	1 557		772		454		2 783	
Not married	674	43.3	198	25.7	121	26.7	993	35.7
Not married but living with partner	593	38.1	82	10.6	66	14.5	741	26.6
Married	212	13.6	434	56.2	234	51.5	880	31.6
Married but not living with partner	17	1.1	17	2.2	1	0.2	35	1.3
Divorced/widowed/separated/other	61	3.9	41	5.3	32	7.1	134	4.8
Citizenship	1 547		778		453		2 778	
South Africa	942	60.9	299	38.4	435	96.0	1 676	60.3
Swaziland	220	14.2	1	0.1	1	0.2	222	8.0
Mozambique	373	24.1	12	1.5	15	3.3	400	14.4
Zimbabwe	5	0.3	463	59.5	0	0.0	468	16.9
Lesotho	1	0.1	0	0.0	0	0.0	1	0.0
Other sub-Saharan country	0	0.0	2	0.3	2	0.4	4	0.1
Other country	4	0.2	0	0.0	0	0.0	4	0.1
No response	2	0.1	1	0.1	0	0.0	3	0.1

	Malelane		Musina		Tzaneen		Total	
	No.	%	No.	%	No.	%	No.	%
Work Status	1 556		778		453		2 787	
Permanent employee	1 215	78.1	347	44.6	341	75.3	1 903	68.3
Contract worker	331	21.3	428	55.0	112	24.7	871	31.3
No response	10	0.6	3	0.4	0	0.0	13	0.5
Time worked as farm worker	1 550		780		430		2 760	
Less than 3 months	359	23.2	142	18.2	32	7.4	533	19.3
Between 3 months and 1 year	334	21.5	123	15.8	70	16.3	527	19.1
Between 1 and 3 years	325	21.0	124	15.9	89	20.7	538	19.5
Between 4 and 10 years	221	14.3	173	22.2	132	30.7	526	19.1
More than 10 years	311	20.1	215	27.6	106	24.7	632	22.9
No response	0	0.0	3	0.4	1	0.2	4	0.1

Table 2 above describes the study population. There were similar numbers of male and female farm workers in Malelane and Musina but women make up two thirds of workers in Tzaneen. Almost all participants were Black Africans and so no race-based analysis was done. Just over half of participants in Tzaneen and Musina were married but only 14 per cent of those in Malelane.

In Tzaneen almost all workers were from South Africa but in Malelane 6 in every 10 were South African and in Musina only 4 out of every 10 were South African. In Malelane and Tzaneen three quarters of employees were permanent but only 45 per cent were permanent in Musina.

Table 3: Measures of mobility of farm workers

	Malelane		Musina		Tzaneen		Total	
	No.	%	No.	%	No.	%	No.	%
Stay during the week	1 562		779		455		2 796	
On the compound on the farms	608	38.9	630	80.9	182	40.0	1 420	50.8
In rented accommodation in a township	34	2.2	7	0.9	9	2.0	50	1.8
In my own home	916	58.6	132	16.9	264	58.0	1 312	46.9
In an informal settlement	4	0.3	6	0.8	0	0.0	10	0.4
Other	0	0.00	4	0.5	0	0.0	4	0.1
Frequency see spouse/family	1 549		758		451		2 758	
Daily	1 129	72.9	356	47.0	275	61.0	1 760	63.8
At least once a week	138	8.9	34	4.5	85	18.9	257	9.3
Monthly	199	12.9	95	12.5	81	18.0	375	13.6
3 to 4 times a year	61	3.9	133	17.6	3	0.7	197	7.1
Less often	22	1.4	135	17.8	5	1.1	162	5.9
No response	0	0.0	5	0.7	2	0.4	7	0.3

In Musina over 8 out of every 10 employees lived in compounds on farms whereas only around 4 out of every 10 lived in compounds in the other two areas. Farm workers that did not reside in a farm compound tended to stay in their own homes with very few renting accommodation in townships and almost none reporting to be living in informal settlements.

In Malelane and Tzaneen, most farm workers live with their partners and/or families and see them daily whereas slightly less than half of employees in Musina have such an arrangement. Almost half of participants in Musina see their partners only once a month or less often.

9.2 Risk Behaviours

In this section the frequency of various risk behaviours that may put farm workers at increased risk of transmitting or acquiring HIV are discussed and the regions compared.

Table 4: Frequencies of selected sexual behaviours by farming area

	Sample	Malelane		Musina		Tzaneen		Total	
	No.	No.	%	No.	%	No.	%	No.	%
Ever had sex	2 801	1 545	98.9	763	97.5	454	99.8	2 762	98.6
Sex in last 12 months (of ever had sex)	2 722	1 342	87.1	670	89.9	407	90.0	2 416	88.8
Among those reporting ever had sex									
Age first had sex		1 527		742		445		2 731	
15 years or younger		343	22.5	136	18.3	46	10.3	525	19.3
16–18 years		611	40.0	285	38.4	186	41.8	1 082	39.9
19–21 years		350	22.9	181	24.4	128	28.8	659	24.3
Over 21		223	14.6	140	18.9	85	19.1	448	16.5
Condom use at last sex (yes)	2 699	709	46.9	333	45.1	196	43.8	1 238	45.9
Condom use at last sex with non-regular partner (yes)	2 515	784	52.3	375	56.6	189	53.4	1 348	53.6
Last sexual partner 10+ years older/younger		1 528		747		449		2 724	
No		603	39.5	318	42.6	241	53.7	1 162	42.7
Last sexual partner 10+ years older		706	46.2	237	31.8	144	32.1	1 087	39.9
Last sexual partner 10+ years younger		219	14.3	192	25.7	64	14.3	475	17.4
> 1 sex partner in the last year	2 370	498	37.8	150	23.2	97	24.1	745	31.4
Been forced to have sex against will in last year (yes)*	2 365	245	18.7	45	6.9	34	8.5	375	15.9
Sex when drunk in the last month*	2 394	271	20.3	72	10.8	44	11.1	387	16.2
Sores on genitals in last 3 months (yes)*	2 760	236	15.3	53	6.9	39	8.7	328	11.9
Unusual discharge in last 3 months (yes)*	2 695	240	15.9	48	6.5	29	6.6	317	11.8

* Filtered by Yes for ever had sex and sex in last 12 months

Table 4 shows that around 10 per cent of sexually experienced farm workers have not had sex for the last year. The reasons for this are likely to be diverse but it does indicate that so-called “secondary abstinence” does occur. Twice as many farm workers in Malelane (22.5%) reported having had sex before the age of 15 in comparison to Tzaneen (10.3%).

Condom use at last sex and last risky sex was remarkably similar across the sites. Condom use at last risky sex is just over 50 per cent, which indicates that farm workers are not using condoms consistently even in such situations. Access to condoms is not a major obstacle because, as shown in table 31, condoms are freely available on the farms.

Between 7 and 19 per cent of farm workers have been forced against their will to have sex in the last year, with the rate in Malelane twice the rate in other areas.

Table 5: Frequency of reported sexual risk behaviours

	Malelane		Musina		Tzaneen		Total	
	No.	%	No.	%	No.	%	No.	%
I sometimes give/receive money or gifts in exchange for sex	1 533		758		449		2 740	
Agree strongly	55	3.6	22	2.9	1	0.2	78	2.9
Agree	208	13.6	55	7.3	20	4.5	283	10.3
Unsure/no response	96	6.3	11	1.5	0	0.0	107	3.9
Disagree	1 077	70.3	451	59.5	350	78.0	1 878	68.4
Disagree strongly	97	6.3	219	28.9	78	17.4	394	14.4
I have given/received a job in exchange for sex	1 541		762		454		2 757	
Agree strongly	45	2.9	13	1.7	1	0.2	59	2.1
Agree	158	10.3	27	3.5	7	1.5	192	7.0
Unsure/no response	8	0.5	2	0.3	0	0.0	10	0.4
Disagree	1 218	79.0	485	63.7	374	82.4	2 077	75.3
Disagree strongly	112	7.3	235	30.8	72	15.9	419	15.2
I have given/received accommodation in exchange for sex	1 542		760		453		2 755	
Agree strongly	31	2.0	4	0.5	0	0.0	35	1.3
Agree	163	10.6	30	4.0	7	1.6	200	7.3
Unsure/no response	4	0.3	4	0.5	1	0.2	9	0.3
Disagree	1 229	79.7	483	63.6	369	81.5	2 081	75.5
Disagree strongly	115	7.5	239	31.5	76	16.8	430	15.6
I have given/received transport in exchange for sex	1 542		762		454		2 753	
Agree strongly	33	2.1	7	0.9	2	0.4	42	1.5
Agree	164	10.6	18	2.4	7	1.5	189	6.9
Unsure/no response	49	3.2	19	2.5	0	0.0	68	2.5
Disagree	1 192	77.3	479	62.9	371	81.7	2 042	74.0
Disagree strongly	104	6.7	239	31.4	74	16.3	417	15.1

Around one in ten employees sometimes engage in “transactional sex” (sex in exchange for money or gifts), with the practice being most common in Malelane. Similar proportions of employees have traded sex for other benefits such as accommodation, employment and transport with all these practices being slightly more common in Malelane. There was very little difference between farm workers’ country of origin and their engagement in “transactional sex”.

Table 6: Self-reported use of alcohol

	Malelane		Musina		Tzaneen		Total	
	No.	%	No.	%	No.	%	No.	%
Never drink	974	62.7	540	69.1	328	72.4	1 842	66.1
Occasionally, once in a while	284	18.3	100	12.8	71	15.7	455	16.3
Less than once a week	44	2.8	25	3.2	9	2.0	78	2.8
Once a week	187	12.0	83	10.6	21	4.6	291	10.4
More than once a week	59	3.8	24	3.1	23	5.1	106	3.8
Daily	5	0.3	10	1.3	1	0.2	16	0.6
Total	1 553	100	782	100	453	100	2 789	100

Table 7: Self-reporting of having been drunk in the last month

	Malelane		Musina		Tzaneen		Total	
	No.	%	No.	%	No.	%	No.	%
Yes	462	31.7	177	25.7	79	23.7	718	29.0
No	995	68.3	513	74.4	254	76.3	1 762	71.1
Total	1 457	100	690	100	333	100	2 480	100

Around two thirds of farm workers report that they never drink and very small proportions drink more than once a week. However, as table 7 shows, more than a quarter of employees report having been drunk in the last month. It appears that whilst chronic alcohol abuse is rare, binge drinking in this population may be a problem.

10. HIV PREVALENCE

This section presents the HIV prevalence results by various demographic and behavioural factors. Note that the denominators are not the same for all tables because of missing data.

Table 8: HIV Prevalence for the entire study sample

	No.	%
Negative	1 692	60.5
Positive	1 106	39.5
Total	2 798	

Table 8 above shows that the prevalence of HIV is very high among farm workers with almost 4 out of every 10 being HIV positive. This is the highest prevalence ever published in southern Africa among a working population that the authors are aware of.

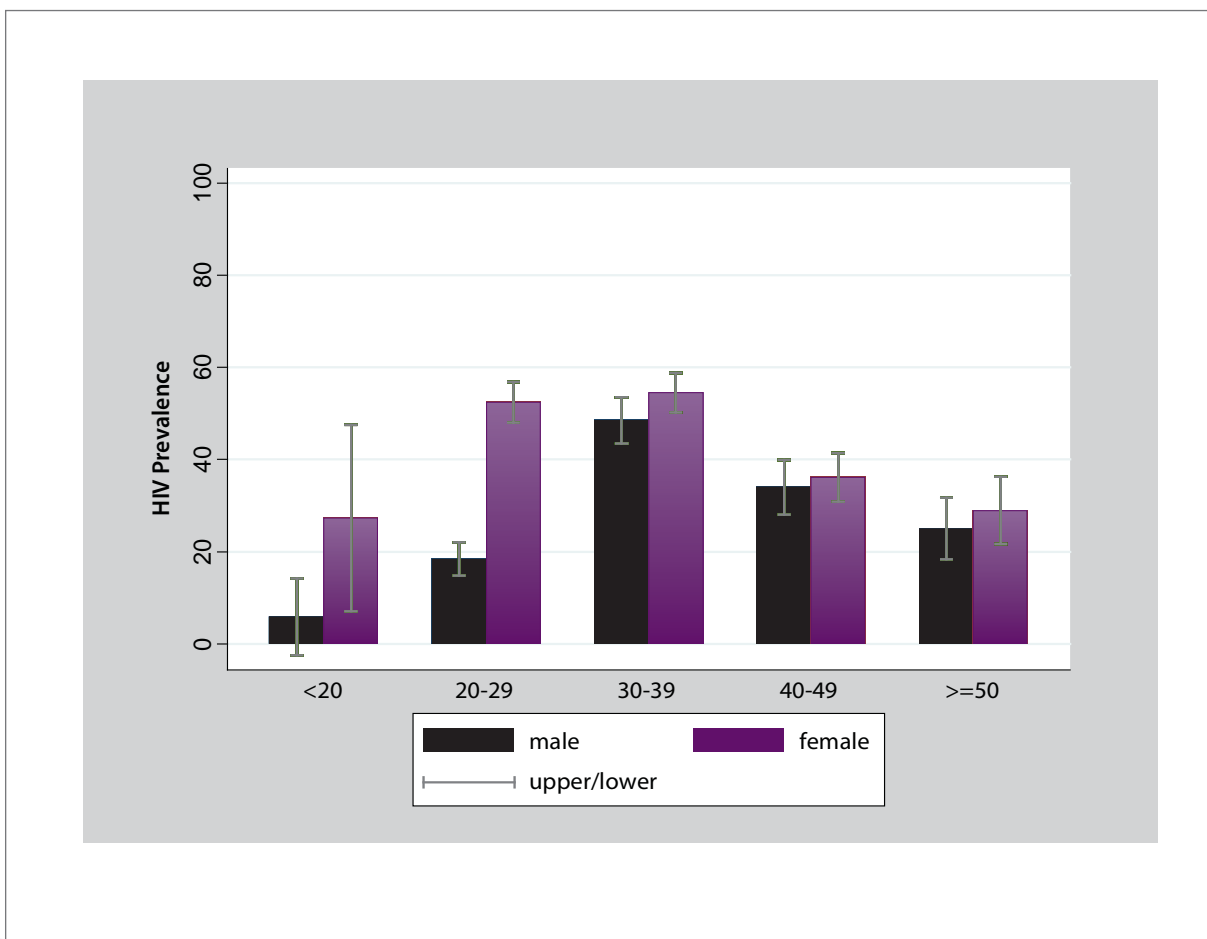
Table 9: HIV prevalence in relation to demographic factors among farm workers

Demographic Factor	Total			
	No.	HIV+	%	95% CI
Sex	2 793	1 103	39.5	33.0–46.4
Male	1 276	394	30.9	24.5–38.0
Female	1 517	709	46.7	40.5–53.1
Age	2 790	1 106	39.6	33.2–46.5
<20	56	8	14.3	5.9–30.9
20–29	951	344	36.2	26.5–47.1
30–39	899	469	52.2	45.7–58.5
40–49	568	200	35.2	28.9–42.1
>=50	256	85	26.9	21.1–33.6
Marital Status	2 779	1 102	39.7	33.2–46.5
Not married	992	429	43.2	37.4–49.3
Not married but living with partner	741	349	47.1	41.5–52.7
Married	878	248	28.2	23.5–33.6
Divorced/widowed/separated/other	133	63	47.4	39.8–55.0
Working Area	2 798	1 106	39.5	33.0–46.4
Malelane	1 563	767	49.1	45.1–53.1
Musina	783	220	28.1	23.5–33.2
Tzaneen	542	119	26.3	18.3–36.3

Demographic Factor	Total			
	No.	HIV+	%	95% CI
Time worked as farm worker	2 752	1 090	39.6	33.1–46.5
Less than 3 months	533	229	43.0	33.2–53.3
Between 3 months and 1 year	526	197	37.5	28.8–47.0
Between 1 and 3 years	537	234	43.6	34.6–53.0
Between 4 and 10 years	525	205	39.0	33.2–45.2
More than 10 years	631	225	35.7	30.8–40.8

Nearly half of the workforce in Malelane is living with HIV. HIV prevalence is substantially and significantly higher among women than men (46.7% v 30.9%). More than half of farm workers between 30 and 39 years of age are HIV positive. This is shown in the graph below.

Graph 1: HIV prevalence by gender and age with 95 per cent confidence interval bars.



Being married appears to be highly protective against acquiring HIV and Table 10 shows that participants who were married had lower reported sexual risk behaviours.

Table 10: Associations between marital status and sexual behaviours and HIV risk factors

Percentage reporting:	Not married	Co-habiting	Married
Two or more partners in last year	31%	43%	24%
First sex under 15 years of age	20%	23%	14%
Forced sex in last 12 months	15%	18%	9%
Sex drunk in past month	16%	22%	13%
Genital sores in last 3 months	13%	16%	8%
Genital discharge in last 3 months	14%	16%	7%

Table 11: HIV prevalence in relation to measures of mobility

Mobility measure	No.	HIV+	%	95% CI
Permanent employee	1 899	783	41.2	35.1–47.6
Contract worker	871	315	36.2	28.5–44.7
Live in compound	1 418	511	36.0	28.9–43.9
Live in own home/rented home	1 360	589	43.3	36.5–50.3
Live with spouse/family	1 679	741	44.1	38.4–50.1
Live separately	1 075	354	32.0	26.1–40.5
See partner at least weekly*	2 014	845	42.0	36.4–47.7
See partner less often	733	249	34.0	25.7–43.3
South Africa	1 672	683	40.8	34.8–47.2
Swaziland	222	115	51.8	45.6–58.0
Mozambique	400	166	41.5	35.5–47.7
Zimbabwe	468	133	28.4	22.7–35.0

* Note that the terms spouse/partner/marriage were not defined on the questionnaire. Therefore, respondents may have had varying understandings of what is meant by the term.

The HIV prevalence was lowest among Zimbabweans and the highest prevalence was found among workers from Swaziland.

Table 11 has results that are unexpected in that people who may be considered more “mobile” (i.e. are contract employees, live away from their families and see their partner less than once a week) are all *less* likely to be HIV positive (although it must be noted that none of these differences reaches statistical significance).

Whilst it may seem counterintuitive that farm workers who live with their families during the working week have a higher HIV prevalence than those living apart, the HIV prevalence data is consistent with HIV behaviour data in these two groups. When comparing the sexual behaviours of those living together with those living apart (regardless of marital status), analysis of the data showed that the former are more likely to:

- 1) have had sex before age 15 years (22% vs 16%, $p = 0.0136$),
- 2) have experienced forced sex in the last 12 months (17% vs 8%, $p = 0.0000$),
- 3) have had more than one partner in the last month (36% vs 28%, $p = 0.0385$),
- 4) have self-reported genital sores (15% vs 8%, $p = 0.0006$) and genital discharge (15% vs 7%, $p = 0.0000$)

Table 12: Age at first sex by HIV status of those who have ever had sex

Age at first sex	Total	HIV+	Percentage	CI
15 years or younger	525	238	45.3	38.3–52.6
16–18 years	1 081	438	40.5	33.1–48.4
19–21 years	658	258	39.2	33.1–45.7
Over 21	447	152	34.0	26.1–42.9
Total	2 711	1 086	40.1	33.6–46.9

As has been found in other studies, individuals who have an earlier sexual debut are more likely to be HIV positive.

Table 13: The frequency of age-disparate sex by gender

Partner older?*	Male	%	Female	%	Total
No	496	42.8	663	57.2	1 159
10 years or more older	336	31.0	747	69.0	1 083
10 years or more younger	393	82.7	82	17.3	475

* Filtered by ever had sex

Of those participants whose last partner was older than them by 10 years or more years, more than two thirds were women.

Table 14: The association between age-disparate sex and risk of HIV

Partner older?*	Total	HIV+	Percentage	CI
No	1 159	463	39.9	32.6–47.8
10 years or more older	1 087	477	43.9	38.2–49.7
10 years or more younger	475	154	32.4	23.6–42.7
Total	2 721	1 094	40.2	33.9–46.9

* Filtered by ever had sex

In this study 69 per cent of the people who had partners 10 years (or more) older were female. Of the 475 farm workers who had partners 10 years (or more) younger, 82.7 per cent were males. In this study, although HIV infection is highest in those whose last sexual partner was 10 or more years older, there were no statistically significant differences between groups.

Table 15: Association between various risk behaviours and prevalence of HIV

	Total	HIV+	Percentage	CI
No. of sex partners in the last 12 months*	2 367	964	40.7	33.8–48.0
One	1 622	667	41.1	35.2–47.3
Two or more	745	297	39.9	30.5–50.0
No. of sex partners in the last month*	2 297	936	40.7	33.6–48.1
None	100	32	33.0	19.1–48.5
One	1 472	596	40.5	34.2–47.1
Two or more	725	308	42.5	34.5–50.9
Forced to have sex*	2 362	959	40.6	33.5–48.1
Yes	323	155	48.0	38.5–57.6
No	2 039	804	39.4	32.7–46.6
Sex while drunk in past month*	2 391	973	40.7	33.8–48.0
Yes	387	152	39.3	31.8–47.3
No	1 980	815	41.2	34.0–48.7
Not had sex in last month	24	6	25.0	11.4–46.4
Condom use at last sex	2 696	1 083	40.2	33.8–46.9
Yes	1 237	522	42.2	34.5–50.3
No	1 459	561	38.5	33.0–44.2
Condom use with non-regular sex partner	2 512	1 026	40.8	34.1–47.9
Yes	1 346	545	40.5	33.4–48.1
No	1 166	481	41.3	34.7–48.2

	Total	HIV+	Percentage	CI
Sores on penis/vagina in last 3 months	2 757	1 096	39.8	33.4–46.4
Yes	328	169	51.5	45.1–57.9
No	2 429	927	38.2	31.6–45.2
Unusual discharge from penis/vagina in last 3 months	2 692	1 070	39.7	33.3–46.5
Yes	317	155	48.9	42.8–55.0
No	2 375	915	38.5	31.8–45.8

* Filtered by Yes for ever had sex and sex in last 12 months

There was no significant difference in HIV prevalence levels among those admitting to only one sexual partner versus those admitting to two or more partners whether in the last year or last month. There was also no statistically significant association between a history of forced sex and HIV or between being drunk in the last month and HIV.

Farm workers with symptoms of an STI appear to have a higher risk of being HIV positive but this difference did not achieve statistical significance.

Table 16: Frequency of alcohol consumption by HIV Status

	Total	HIV+	Percentage	CI
Never drink	1 839	744	40.5	33.6–47.7
Occasionally	455	156	34.3	30.1–38.7
Less than once a week	78	26	33.3	23.2–45.2
Once a week	291	131	45.0	34.2–56.3
More than once a week	106	34	32.1	22.7–43.2
Daily	16	7	43.8	18.6–72.5
Total	2 785	1 098	39.4	32.9–46.3

There was no association found between alcohol consumption and HIV.

Table 17: Risky sexual behaviours among people living with HIV

	HIV+		Known HIV+ status	
	No.	%	No.	%
No. of sex partners in the last 12 months*	964		375	
One	667	69.2	260	69.3
Two or more	297	30.8	115	30.7
Condom use at last sex**	1 083		422	
Yes	522	48.2	201	47.6
No	561	51.8	221	52.4
Condom use with non-regular sex partner**	1 026		402	
Yes	545	53.1	211	52.5
No	481	46.9	191	47.5

* If ever had sex and sex in the last 12 months

** If ever had sex

Table 17 above shows that having multiple partners and inconsistent condom use is high among people who are already HIV positive, even amongst those who report knowing that they have HIV, although these are not statistically significant.



Banana farm, Malelane. © IOM 2010 (Photo: Erin Tansey)

11. GENERAL HEALTH OF FARM WORKERS

This section of the report presents data on the self perceived health status of farm workers and on self reported chronic illnesses.

Table 18: Self-perceived health status of farm workers

Self-perceived status of health	Malelane		Musina		Tzaneen		Total	
	No.	%	No.	%	No.	%	No.	%
Excellent	261	16.7	206	26.6	128	28.2	595	21.3
Very good	422	27.0	160	20.7	145	31.9	727	26.1
Good	521	33.4	252	32.5	114	25.1	887	31.9
Fair	314	20.1	120	15.5	54	11.9	488	17.5
Poor	43	2.8	37	4.8	13	2.9	93	3.3
Total	1 561	100	775	100	454	100	2 790	100

In all three farming areas, the bulk of employees perceived themselves to be generally healthy, with three quarters of participants in Malelane stating that their health was good to excellent and slightly higher proportions in the other areas stating the same.

Table 19: Frequency of farm accidents

Have you had an accident on the farm?	Malelane		Musina		Tzaneen		Total	
	No.	%	No.	%	No.	%	No.	%
Yes	161	10.5	67	8.6	64	14.2	292	10.6
No	1 368	89.2	707	91.1	385	85.4	2 460	89.1
No Response	5	0.3	2	0.3	2	0.4	9	0.3
Total	1 534	100	776	100	451	100	2 761	100

Overall about 10 per cent of employees claimed to have had an accident on the farm but without information on the severity of the accidents this statistic is difficult to interpret.

Table 20: Percentage of farm workers who have been diagnosed with the following illnesses

Chronic Illness	Malelane		Musina		Tzaneen		Total	
	No.	%	No.	%	No.	%	No.	%
High blood pressure/hypertension	1 555		783		455		2 793	
	213	13.7	63	8.1	51	11.2	327	11.7
Diabetes	1 555		783		454		2 792	
	95	6.1	22	2.8	10	2.2	127	4.6
Tuberculosis	1 547		782		455		2 784	
	121	7.8	37	4.7	9	2.0	167	6.0
Asthma	1 556		783		455		2 794	
	127	8.2	33	4.2	11	2.4	171	6.1
Depression/anxiety	1 556		783		454		2 793	
	275	17.7	56	7.2	55	12.1	386	13.8
Chronic back and/or neck pain	1 556		782		454		2 792	
	333	21.4	138	17.7	84	18.5	555	19.9
Overweight	1 539		777		454		2 767	
	144	9.4	43	5.5	23	5.1	210	7.6

Tuberculosis was most commonly reported in Malelane. One in five employees reported chronic back and/or neck pain, making this the most common chronic illness. The second most common was depression and/or anxiety.

11.1 General Health and HIV

Table 21: Health status by HIV status

Health status	Total	HIV+	Percentage	CI
Excellent	592	201	34.0	26.3–42.5
Very Good	726	262	36.1	26.9–46.4
Good	887	339	38.2	32.0–44.9
Fair	488	253	51.8	46.2–57.4
Poor	93	46	49.5	40.0–59.0
Total	2 786	1 101	39.5	33.0–46.4

Table 21 shows that the prevalence of HIV is substantially and significantly higher among those employees who perceive their health to be fair or poor.

Table 22: Absent from work because of personal or health problems by HIV status

Absent?	Total	HIV+	Percentage	CI
No	2 002	759	37.9	31.0–45.4
Yes	692	315	45.5	40.9–50.2
Total	2 694	1 074	39.9	33.4–46.7

Table 22 shows that, although people who were absent from work appear to be at higher risk of being HIV positive, this was not a statistically significant finding.

Table 23: Association between a diagnosis of TB and HIV status

TB	Total	HIV+	Percentage	CI
Yes	167	98	58.7	45.1–71.1
No	2 610	1 001	38.4	31.6–45.6
Total	2 777	1 099	39.6	33.1–46.4

TB is one of the most common opportunistic diseases in HIV positive people so it is not surprising that HIV prevalence is higher among people previously diagnosed with TB. However, this study found that among those farm workers who reported being HIV positive, over 58 per cent of them are also infected with TB. This figure is very high and should not be ignored.

12. QUALITY OF LIFE

This section deals with measures of self-perception of quality of life.

Table 24: Self-perceptions on the quality of life

Quality of life measure	Malelane		Musina		Tzaneen		Total	
	No.	%	No.	%	No.	%	No.	%
My job is meaningful	1 554		777		454		2 785	
Agree strongly	487	31.4	287	36.9	154	33.9	928	33.3
Agree	859	55.3	295	38.0	243	53.5	1 397	50.2
Unsure/no response	20	1.3	12	1.5	5	1.1	37	1.3
Disagree	187	12.0	139	17.9	48	10.6	374	13.4
Disagree strongly	1	0.1	44	5.7	4	0.9	49	1.8
I have a good working relationship with my co-workers	1 552		781		455		2 788	
Agree strongly	467	30.1	363	46.5	91	20.0	921	33.0
Agree	983	63.3	360	46.1	331	72.8	1 674	60.0
Unsure/no response	28	1.8	9	1.2	3	0.7	40	1.4
Disagree	72	4.6	38	4.9	29	6.4	139	5.0
Disagree strongly	2	0.1	11	1.4	1	0.2	14	0.5
I have personally experienced discrimination and/or harassment in the workplace in the last year	1 562		782		455		2 799	
Agree strongly	157	10.1	92	11.8	18	4.0	267	9.5
Agree	365	23.4	107	13.7	75	16.5	547	19.5
Unsure/no response	41	2.6	5	0.6	6	1.3	52	1.9
Disagree	980	62.7	372	47.6	321	70.6	1 673	59.8
Disagree strongly	19	1.2	206	26.3	35	7.7	260	9.3
I have been accused in a disciplinary hearing during the last year	1 560		781		453		2 794	
Agree strongly	164	10.5	28	3.6	22	4.9	214	7.75
Agree	359	23.0	102	13.1	48	10.6	509	18.2
Unsure/no response	20	1.3	5	0.6	9	2.0	34	1.2
Disagree	991	63.5	411	52.6	336	74.2	1 738	62.2
Disagree strongly	26	1.7	235	30.1	38	8.4	299	10.7

Over 80 per cent of employees believe that their work is meaningful and that they get on well with their colleagues although 80 per cent of employees believe their life can get better. However, 30 per cent of employees also complain about being harassed or discriminated against in the workplace and a surprisingly high number of employees (one in four) have been formally accused in a disciplinary hearing in the last year.

Table 25: Perceptions about financial security

Measure of financial security	Malelane		Musina		Tzaneen		Total	
	No.	%	No.	%	No.	%	No.	%
I always have sufficient money to buy food for myself	1 535		768		449		2 752	
Agree strongly	186	12.1	76	9.9	72	16.0	334	12.1
Agree	737	48.0	239	31.1	114	25.4	1 090	39.6
Unsure/no response	16	1.0	11	1.4	8	1.8	35	1.3
Disagree	585	38.1	339	44.1	245	54.6	1 169	42.5
Disagree strongly	11	0.7	103	13.4	10	2.2	124	4.5
I always have sufficient money to buy food for my family	1 562		782		454		2 798	
Agree strongly	197	12.6	75	9.6	83	18.3	355	12.7
Agree	672	43.0	244	31.2	119	26.2	1 035	37.0
Unsure/no response	17	1.1	5	0.6	11	2.4	33	1.2
Disagree	659	42.2	332	42.5	231	50.9	1 222	43.7
Disagree strongly	17	1.1	126	16.1	10	2.3	153	5.5
I am saving money for my retirement	1 561		782		455		2 798	
Agree strongly	81	5.2	42	5.4	54	11.9	177	6.3
Agree	490	31.4	153	19.6	144	31.7	787	28.1
Unsure/no response	9	0.6	4	0.5	3	0.7	16	0.6
Disagree	953	61.1	390	49.9	234	51.4	1 577	56.4
Disagree strongly	28	1.8	193	24.7	20	4.4	241	8.6
I have a funeral insurance plan	1 560		780		455		2 795	
Agree strongly	140	9.0	41	5.3	95	20.8	276	9.9
Agree	690	44.2	174	22.3	268	58.9	1 132	40.5
Unsure/no response	11	0.7	4	0.5	0	0.0	15	0.5
Disagree	706	45.3	351	45.0	88	19.3	1 145	41.0
Disagree strongly	13	0.8	210	26.9	4	0.9	227	8.1

Almost half of farm workers report that they do not always have sufficient money to buy food. However, in spite of this situation, about one third of farm workers are managing to save for their retirement and half have funeral policies.

Table 26: Self-perceptions in regards to Maslow's Hierarchy of Needs

Maslow's Indicators*	Malelane		Musina		Tzaneen		Total	
	No.	%	No.	%	No.	%	No.	%
I feel safe in my home	1 561		782		454		2 797	
Agree strongly	614	39.4	349	44.6	153	33.7	1 117	39.9
Agree	826	52.9	335	42.8	272	59.9	1 433	51.2
Unsure/no response	34	2.2	9	1.2	3	0.7	46	1.6
Disagree	83	5.3	72	9.2	24	5.3	179	6.4
Disagree strongly	3	0.2	17	2.2	2	0.4	22	0.8
I feel safe at work	1 561		781		455		2 797	
Agree strongly	393	25.2	268	34.3	136	29.9	797	28.5
Agree	1 017	65.2	402	51.5	269	59.2	1 688	60.4
Unsure/no response	39	2.5	28	3.6	9	2.0	76	2.7
Disagree	85	5.5	70	9.0	37	8.1	192	6.9
Disagree strongly	27	1.7	13	1.7	4	0.9	44	1.6
I do not believe that I will be retrenched or fired in the near future	1 547		777		454		2 778	
Agree strongly	229	14.8	91	11.7	36	7.9	356	12.8
Agree	554	35.8	215	27.7	149	32.8	918	33.1
Unsure/no response	185	12.0	164	21.1	78	17.2	427	15.4
Disagree	551	35.6	222	28.6	180	39.7	953	34.3
Disagree strongly	28	1.8	85	10.9	11	2.4	124	4.5
I have friends and family who are supportive of me	1 561		783		454		2 798	
Agree strongly	478	30.6	318	40.6	102	22.5	898	32.1
Agree	910	58.3	389	49.7	319	70.3	1 618	57.8
Unsure/no response	29	1.9	9	1.2	1	0.2	39	1.4
Disagree	139	8.9	48	6.1	28	6.2	215	7.7
Disagree strongly	5	0.3	19	2.4	4	0.9	28	1.0

Maslow's Indicators*	Malelane		Musina		Tzaneen		Total	
	No.	%	No.	%	No.	%	No.	%
I have a lifetime partner who cares for me	1 562		782		454		2 798	
Agree strongly	361	23.1	370	47.3	104	22.9	835	29.8
Agree	922	59.0	305	39.0	266	58.6	1 493	53.4
Unsure/no response	32	2.1	14	1.8	9	2.0	55	2.0
Disagree	240	15.4	69	8.8	65	14.3	374	13.4
Disagree strongly	7	0.5	24	3.1	10	2.2	41	1.5
I am respected in the community for the work that I do	1 562		782		455		2 799	
Agree strongly	316	20.2	193	24.7	91	20.0	600	21.4
Agree	1 064	68.1	424	54.2	338	74.3	1 826	65.2
Unsure/no response	131	8.4	41	5.2	14	3.1	186	6.7
Disagree	45	2.9	86	11.0	12	2.6	143	5.1
Disagree strongly	6	0.4	38	4.9	0	0.0	44	1.6
My contribution to this farm is recognized by my seniors	1 561		781		455		2 797	
Agree strongly	366	23.5	222	28.4	118	25.9	706	25.2
Agree	980	62.8	374	47.9	306	67.3	1 660	59.4
Unsure/no response	134	8.6	50	6.4	11	2.4	195	7.0
Disagree	75	4.8	105	13.4	15	3.3	195	7.0
Disagree strongly	6	0.4	30	3.8	5	1.1	41	1.5

* In 1943, Abraham Maslow's article A Theory of Human Motivation appeared in Psychological Review, which was further expanded upon in his book: Towards a Psychology of Being. In this article, Abraham Maslow attempted to formulate a needs-based framework of human motivation. The basis of Maslow's theory of motivation is that human beings are motivated by unsatisfied needs, and that certain lower needs must be satisfied before higher needs can be addressed. Per the teachings of Abraham Maslow, there are general needs (physiological, safety, love, and esteem) which have to be fulfilled before a person is able to act unselfishly (www.abraham-maslow.com).

The majority of employees feel safe in their homes and slightly fewer at their places of work. The majority also feel supported by partners or families (over 83 per cent say they have a lifetime partner who cares for them) and their jobs give them a sense of self-esteem. However, more than half are either unsure or concerned that they may lose their jobs in the near future.

Table 27: Sense of community cohesion on the farm

	Malelane		Musina		Tzaneen		Total	
	No.	%	No.	%	No.	%	No.	%
I have the opportunity to share thoughts, feelings and ideas with others on the farm	1 560		778		455		2 793	
Agree strongly	134	8.6	160	20.6	66	14.5	360	12.9
Agree	1 096	70.3	356	45.8	281	61.8	1 733	62.1
Unsure/no response	74	4.7	29	3.7	3	0.7	106	3.8
Disagree	247	15.8	167	21.5	103	22.6	517	18.5
Disagree strongly	9	0.6	66	8.5	2	0.4	77	2.8
I feel that the farm workers on our farm are a community who support each other	1 562		779		455		2 796	
Agree strongly	101	6.5	146	18.8	56	12.3	303	10.8
Agree	1 099	70.4	402	51.6	324	71.2	1 825	65.3
Unsure/no response	151	9.7	41	5.3	12	2.6	204	7.3
Disagree	194	12.4	137	17.6	59	13.0	390	14.0
Disagree strongly	17	1.1	53	6.8	4	0.9	74	2.7
I feel that I am a member of this community	1 564		783		455		2 802	
Agree strongly	218	13.9	230	29.4	71	15.6	519	18.5
Agree	1 039	66.4	374	47.8	340	74.7	1 753	62.6
Unsure/no response	100	6.4	25	3.2	5	1.1	130	4.6
Disagree	196	12.5	108	13.8	39	8.6	343	12.2
Disagree strongly	11	0.7	46	5.9	0	0.0	57	2.0
I feel that people on this farm are able to discuss problems that affect everyone	1 561		782		455		2 798	
Agree strongly	174	11.2	129	16.5	58	12.8	361	12.9
Agree	952	61.0	364	46.6	323	71.0	1 639	58.6
Unsure/no response	154	9.9	72	9.2	10	2.2	236	8.4
Disagree	260	16.7	170	21.7	59	13.0	489	17.5
Disagree strongly	21	1.4	47	6.0	5	1.1	73	2.6

Table 28: Sense of community cohesion on the farm

I feel that people on this farm can solve problems that they discuss	1 562		781		455		2798	
Agree strongly	209	13.4	128	16.4	72	15.8	409	14.6
Agree	938	60.1	327	41.9	322	70.8	1 587	56.7
Unsure/no response	155	9.9	81	10.4	10	2.2	246	8.8
Disagree	246	15.8	177	22.7	47	10.3	470	16.8
Disagree strongly	14	0.9	68	8.7	4	0.9	86	3.1
I feel that people on this farm are willing to work together to make life better on the farm	1 560		781		455		2 796	
Agree strongly	232	14.9	183	23.4	84	18.5	499	17.9
Agree	1 085	69.6	374	47.9	325	71.4	1 784	63.8
Unsure/no response	103	6.6	57	7.3	9	2.0	169	6.0
Disagree	124	8.0	126	16.1	34	7.5	284	10.2
Disagree strongly	16	1.0	41	5.3	3	0.7	60	2.2
I feel that the other people on this farm can be trusted	1 561		780		454		2 795	
Agree strongly	318	20.4	166	21.3	48	10.6	532	19.0
Agree	740	47.4	389	49.9	205	45.2	1 334	47.7
Unsure/no response	139	8.9	29	3.7	17	3.7	185	6.6
Disagree	342	21.9	126	16.2	146	32.2	614	22.0
Disagree strongly	22	1.4	70	9.0	38	8.4	130	4.7

About three quarters of farm employees express positive sentiments about levels of community cohesion on the farms. A similar proportion believe that they have the capacity to cooperate in dealing with common problems that they face. However, this leaves around one in five employees feeling alienated from others on the farms.

The data is not shown here but roughly the same proportions of employees have feelings of cohesion and alienation towards the community outside of the farms.

Table 29: Sense of being treated as an “outsider” by local people

	Malelane		Musina		Tzaneen		Total	
	No.	%	No.	%	No.	%	No.	%
Local people treat me as an outsider or foreigner	1 556		782		455		2 793	
Agree strongly	205	13.2	152	19.4	38	8.4	395	14.1
Agree	471	30.3	212	27.1	123	27.0	806	28.9
Unsure/no response	53	3.4	34	4.4	2	0.4	89	3.2
Disagree	807	51.9	234	29.9	244	53.6	1 285	46.0
Disagree strongly	20	1.3	150	19.2	48	10.6	218	7.8

Almost half of participants believe that local people treat them as foreigners, even in Tzaneen, where the majority of farm workers are South African.



VCT counsellors. © IOM 2010 (Photo: Maromi Health Research)

13. EXPOSURE TO HIV/AIDS PROGRAMMES AND SERVICES

Table 30: Management's response to HIV/AIDS

The management of this workplace take HIV/AIDS seriously	Malelane		Musina		Tzaneen		Total	
	No.	%	No.	%	No.	%	No.	%
Agree strongly	592	38.0	253	32.4	175	38.6	1 020	36.5
Agree	830	53.2	257	32.9	218	48.1	1 305	46.7
Unsure/no response	106	6.8	101	12.9	24	5.3	231	8.3
Disagree	28	1.8	127	16.2	30	6.6	185	6.6
Disagree strongly	3	0.2	44	5.6	6	1.3	53	1.9
Total	1 559		782		453		2 794	

In Malelane and Tzaneen over 80 per cent of employees believe that management take the issue of HIV/AIDS seriously. This is slightly less in Musina where 65 per cent of employees believe this is the case.

Table 31: Involvement in HIV/AIDS activities in the past 12 months

HIV/AIDS-related activity	Malelane		Musina		Tzaneen		Total	
	No.	%	No.	%	No.	%	No.	%
I have attended a meeting or function about HIV/AIDS at this workplace	1 521		732		452		2 705	
	1 227	80.7	397	54.2	316	69.9	1 940	71.7
I have attended a meeting or function about HIV/AIDS in the areas near my workplace but not at the workplace	1 550		758		449		2 757	
	1 282	82.7	393	51.9	229	51.0	1 904	69.1
I have received information in the form of leaflets or booklets about HIV/AIDS at this workplace	1 546		765		452		2 763	
	1 290	83.4	489	63.9	313	69.3	2 092	75.7
I have obtained free condoms at this workplace	1 554		770		454		2 778	
	1 408	90.6	637	82.7	415	91.4	2 460	88.6
I have talked with a peer educator at the workplace	1 549		768		452		2 769	
	1 364	88.1	500	65.1	316	69.9	2 180	78.7

From this survey it would appear that farm workers in Malelane have experienced the highest exposure to workplace HIV/AIDS activities and interactions with change agents and those in Musina the least. Similar proportions by site have also attended HIV/AIDS-related functions in their communities away from the farm. Condom access is high in all areas.

Table 32: Percentage of farm workers aware of the following programmes occurring in their workplace

	Malelane		Musina		Tzaneen		Total	
	No.	%	No.	%	No.	%	No.	%
Access to free condoms	1 553		780		451		2 784	
	1 422	91.6	676	86.7	414	91.8	2 512	90.2
Health education sessions for workers being carried out by trained peers/colleagues	1 561		777		454		2 792	
	1 348	86.4	590	75.9	300	66.1	2 238	80.2
HIV information in my language	1 557		776		454		2 787	
	1 391	89.3	575	74.1	376	82.8	2 342	84.0
Sports and recreational or other life skills activities organized from the workplace	1 531		775		454		2 760	
	740	48.3	588	75.9	361	79.5	1 689	61.2
Support groups for employees	1 548		765		453		2 766	
	793	51.2	498	65.1	331	73.1	1 622	58.6
If you discovered you were HIV positive, is there a place at this workplace where you could go for help and support?	1 551		732		427		2 710	
Yes	1 157	74.6	452	61.8	287	67.2	1 896	70.0
Do you know where you can go if you want to receive an HIV test?	1 552		767		454		2 773	
Yes	1 254	80.8	586	76.4	401	88.3	2 241	80.8

Over 70 per cent of employees know how to access free condoms, information and HIV testing facilities. Knowledge about support groups is lowest in Malelane where only half of employees are aware of such options.

13.1 Access to Services

Table 33: HIV testing and access to results and treatment

	Malelane		Musina		Tzaneen		Total	
	No.	%	No.	%	No.	%	No.	%
HIV testing	1 550		775		438		2 763	
In the past year	776	50.1	424	54.7	212	48.4	1 412	51.1
More than a year ago	327	21.1	104	13.4	86	19.6	517	18.7
Never	447	28.8	247	31.9	140	32.0	834	30.2
Tested "on site" at the farm	1 560		781		451		2 792	
Yes	546	35.0	288	36.9	66	14.6	900	32.2
No	814	52.2	318	40.7	273	60.5	1 405	50.3
Did your results indicate you were HIV+	1 560		766		431		2 757	
Yes	337	21.6	46	6.0	52	12.1	435	15.8
No	1 186	76.0	544	71.0	266	61.7	1 996	72.4
Not applicable	32	2.1	150	19.6	104	24.1	286	10.4
No response	5	0.3	26	3.4	9	2.1	40	1.4
Taking ARVs/drugs	1 561		779		425		2 765	
Yes	144	9.2	29	3.7	11	2.6	184	6.7
No	1 398	89.6	656	84.2	245	57.7	2 299	83.2
Not applicable	19	1.2	94	12.1	169	39.8	282	10.2

Slightly over half of farm workers have had HIV tests in the last year and less than one third have never had an HIV test. Except for Tzaneen, a substantial proportion of those tested reported to have done so on the farm. This may have included the testing done during the survey.

Almost one in ten employees in Malelane is on antiretroviral medication, which is high and indicates reasonable access to treatment in this area.

Table 34: Reported attitudes towards various services

	Malelane		Musina		Tzaneen		Total	
	No.	%	No.	%	No.	%	No.	%
If someone robbed me or hurt me seriously, I would report the case to the police	1 559		782		455		2 796	
Agree strongly	549	35.2	338	43.2	157	34.5	1 044	37.3
Agree	928	59.5	351	44.9	226	49.7	1 505	53.8
Unsure/no response	35	2.3	34	4.4	7	1.5	76	2.7
Disagree	44	2.8	47	6.0	62	13.6	153	5.5
Disagree strongly	3	0.2	12	1.5	3	0.7	18	0.6
The police treat foreign workers and migrants worse than they treat local people	1 599		783		455		2 797	
Agree strongly	179	11.5	91	11.6	59	13.0	329	11.8
Agree	728	46.7	203	25.9	118	25.9	1 049	37.5
Unsure/no response	274	17.6	80	10.2	90	19.8	444	15.9
Disagree	367	23.5	251	32.1	177	38.9	795	28.4
Disagree strongly	11	0.7	158	20.2	11	2.4	180	6.4
There are organizations that I know about in this area that cater specifically for the needs of the migrant worker	1 556		779		454		2 789	
Agree strongly	226	14.5	167	21.4	33	7.3	426	15.3
Agree	726	46.7	301	38.6	102	22.5	1 129	40.5
Unsure/no response	272	17.5	96	12.3	106	23.4	474	17.0
Disagree	317	20.4	177	22.7	160	35.2	654	23.5
Disagree strongly	15	1.0	38	4.9	53	11.7	106	3.8
If I was found to be HIV positive, I believe that I could get treatment from the nearby government clinic	1 559		783		455		2 797	
Agree strongly	538	34.5	335	42.8	122	26.8	995	35.6
Agree	986	63.3	355	45.3	307	67.5	1 648	58.9
Unsure/no response	14	0.9	31	4.0	2	0.4	47	1.7
Disagree	17	1.1	53	6.8	24	5.3	94	3.4
Disagree strongly	4	0.3	9	1.2	0	0.0	13	0.5

More than 90 per cent of farm workers would report criminal behaviour to the police. However, half the workers also believe that the police treat foreigners and migrants worse than locals.

Far fewer farm workers in Tzaneen know about organizations that assist migrant workers.

Almost all workers believe that they could access HIV treatment from a government clinic. Government clinics are also the most commonly used health facility (90%) with only 3.7 per cent claiming to go to private doctors and 4.5 per cent to traditional healers.³

Table 35: Listing of category of person to whom the participant will go if he/she has a problem with health or any other concern

Category of person	Malelane		Musina		Tzaneen		Total	
	No.	%	No.	%	No.	%	No.	%
Manager	308	19.8	264	34.1	76	16.8	648	23.3
Supervisor	1 160	74.6	367	47.4	281	62.0	1 808	65.0
Trade Union Shop Steward	11	0.7	52	6.7	49	10.8	112	4.0
Co-worker	15	1.0	27	3.5	23	5.1	65	2.3
Friend	52	3.3	46	5.9	20	4.4	118	4.2
Other	9	0.6	11	1.4	3	0.7	23	0.8
No-one	1	0.1	7	0.9	1	0.2	9	0.3
Total	1 556	100	774	100	543	100	2 783	100

In all sites the overwhelming majority of employees will seek assistance from management on the farm rather than fellow farm workers.

³ The results from this IBBSS did not present evidence that foreign workers avoid accessing government healthcare facilities. However, evidence from other recent studies reveals that although the South African Constitution guarantees access to health care and other essential services to all those who live in the country – including refugees, asylum-seekers and migrants, regardless of legal status – in practice, the fear of arrest, deportation and xenophobia, coupled with a lack of accurate information about their rights, has kept many Zimbabweans from accessing basic services necessary for survival. Today, Zimbabweans are still often charged exorbitant fees to access public facilities despite policies to the contrary, turned away from hospitals when they need admission, discharged prematurely, or subjected to harsh treatment by health staff in the public services “Medical and humanitarian needs of Zimbabweans in South Africa” MSF, June 2009.

13.2 Knowledge about HIV and AIDS

Table 36: Proportion of farm workers who believe the following statements are true

	Malelane		Musina		Tzaneen		Total	
	No.	%	No.	%	No.	%	No.	%
People can protect themselves from HIV infection by staying faithful to one uninfected faithful sex partner	1 525		776		451		2 752	
	1 314	86.2	648	83.5	389	86.3	2 351	85.4
People can protect themselves from HIV infection by using a condom correctly every time they have sex	1 556		779		454		2 789	
	1 458	93.7	686	88.1	426	93.8	2 570	92.2
People can protect themselves from HIV infection by abstaining from sex	1 554		782		447		2 783	
	1 433	92.2	639	81.7	380	85.0	2 452	88.1
People can get infected with HIV through a mosquito bite	1 553		781		448		2 782	
	408	26.3	254	32.5	129	28.8	791	28.4
People can get infected with HIV by sharing a meal with someone who is infected	1 548		778		434		2 760	
	435	28.1	188	24.2	47	10.8	670	24.3
It is possible for a healthy looking person to have HIV, the virus that causes AIDS	1 558		780		451		2 789	
	1 202	77.2	572	73.3	379	84.0	2 153	77.2
A mother can pass HIV on to her baby through breastfeeding	1 550		779		452		2 781	
	1 202	77.6	622	79.9	404	89.4	2 228	80.1
If a person is raped, there are drugs available that can prevent HIV infection	1 548		779		449		2 776	
	815	52.7	352	45.2	202	45.0	1 374	49.5
There are drugs available called antiretrovirals that can help people with HIV/AIDS live longer	1 550		776		453		2 779	
	1 324	85.4	589	75.9	417	92.1	2 330	83.8

Most employees know the basics about the transmission of HIV. However, more than a quarter believe the myth that HIV can be transmitted by mosquitoes. Only half know that there are medications that can be taken by rape victims to prevent the acquisition of HIV.

13.3 Attitudes

Table 37: Attitudes and perceptions to non-regular sexual partnerships

Type of sexual partnership	Malelane		Musina		Tzaneen		Total	
	No.	%	No.	%	No.	%	No.	%
I believe it is acceptable for me to have one-night stands	1 561		782		453		2 796	
Agree strongly	430	27.6	102	13.0	18	4.0	550	19.7
Agree	601	38.5	60	7.7	34	7.5	695	24.9
Unsure/no response	18	1.2	31	4.0	5	1.1	54	1.9
Disagree	481	30.8	316	40.4	329	72.6	1 126	40.3
Disagree strongly	31	2.0	273	34.9	67	14.8	371	13.3
It is acceptable to me for a man to have more than one girlfriend at a time	1 560		783		455		2 798	
Agree strongly	87	5.6	40	5.1	13	2.9	140	5.0
Agree	220	14.1	49	6.3	47	10.3	316	11.3
Unsure/no response	18	1.2	9	1.2	1	0.2	28	1.00
Disagree	1 176	75.4	392	50.1	332	73.0	1 900	67.9
Disagree strongly	59	3.8	293	37.4	62	13.6	414	14.8
It is acceptable to me for a woman to have more than one boyfriend at a time	1 559		783		455		2 797	
Agree strongly	112	7.2	20	2.6	4	0.9	136	4.8
Agree	187	12.0	29	3.7	13	2.9	229	8.1
Unsure/no response	45	2.9	15	1.9	2	0.4	62	2.2
Disagree	1 147	73.6	339	43.3	348	76.5	1 834	65.6
Disagree strongly	68	4.4	380	48.3	88	19.3	536	19.2

Whilst two thirds of participants in Malelane believe that it is OK to have a “one-night stand”, only one in five believes this in Musina and just over one in ten in Tzaneen. More people in Malelane also report that having more than one partner at a time is acceptable.

Table 38: Levels of stigma related to HIV/AIDS

Measure of stigma	Malelane		Musina		Tzaneen		Total	
	No.	%	No.	%	No.	%	No.	%
If I told my colleague at work that I was HIV positive, they would support me	1 558		783		454		2 786	
Agree strongly	192	12.3	104	13.3	48	10.6	344	12.3
Agree	529	34.0	220	28.1	166	36.6	915	32.8
Unsure/no response	180	11.6	97	12.4	52	11.5	329	11.8
Disagree	631	40.5	215	27.5	152	33.5	998	35.8
Disagree strongly	26	1.7	147	18.8	36	7.9	209	7.5
I would have no problem working with someone who is HIV positive	1 551		778		453		2 782	
Agree strongly	481	31.0	233	29.9	144	31.8	858	30.8
Agree	877	56.5	365	46.9	263	58.1	1 505	54.1
Unsure/no response	26	1.7	33	4.2	1	0.2	60	2.2
Disagree	143	9.2	126	16.2	34	7.5	303	10.9
Disagree strongly	24	1.5	21	2.7	11	2.4	56	2.0
Teachers who are HIV positive should be allowed to continue working	1 560		782		455		2 797	
Agree strongly	618	39.6	343	43.9	155	34.1	1 116	39.9
Agree	777	49.8	286	36.6	254	55.8	1 317	47.1
Unsure/no response	26	1.7	33	4.2	14	3.1	73	2.6
Disagree	131	8.4	92	11.8	28	6.2	251	9.0
Disagree strongly	8	0.5	28	3.6	4	0.9	40	1.4
People who are HIV positive are discriminated against in this farm	1 551		781		455		2 787	
Agree strongly	212	13.7	62	7.9	18	4.0	292	10.5
Agree	436	28.1	106	13.6	58	12.7	600	21.5
Unsure/no response	188	12.1	87	11.1	65	14.3	340	12.2
Disagree	680	43.8	309	39.6	279	61.3	1 268	45.5
Disagree strongly	35	2.3	217	27.8	35	7.7	287	10.3

Around half of all employees believe that their colleagues would be supportive of them if they disclosed that they were HIV positive. Overall, about 90 per cent of workers indicated that they had accepting attitudes towards PLWHA.

13.4 Communication and Information

Table 39: Exposure two days a week or more, by medium

	Sample	Malelane		Musina		Tzaneen		Total	
	No.	No.	%	No.	%	No.	%	No.	%
Listen to the radio	2 783	1 100	71.0	514	65.8	319	70.6	1 933	69.5
Watch television	2 789	977	62.8	324	41.6	268	59.0	1 569	56.3
Read a magazine	2 772	119	7.7	74	9.7	59	13.0	252	9.1
Read a newspaper	2 796	85	5.5	64	8.2	79	17.4	228	8.2
Use the internet	2 795	18	1.2	9	1.2	13	2.9	40	1.4
Use email	2 795	18	1.2	8	1.0	11	2.4	37	1.3

Most employees have access to radio and television but access to other forms of media is restricted to very few employees.

14. MULTIVARIABLE ANALYSIS

In previous sections of this report, associations between various factors and HIV have been reported. This is called “bivariate” analysis. However, associations between variables may not always be causative and may occur because of confounding by other factors. For this reason, a multivariable analysis was done.

A multiple logistic regression model was used to identify factors which are independently associated with positive HIV status. Variables known to be associated with HIV status were identified. Those significant at the univariate level were included in the model. These included both demographic and behavioural variables. Non-significant variables excluded were: Condom use last sex ($p = 0.7$); partner age difference ($p = 0.2$); sex while drunk ($p = 0.2$). All other variables were included in a backwards selection model with the probability of removal, $p = 0.1$.

Table 40: Multivariate analysis

Restricted to sexually active						
Risk Factors	Unadjusted analysis			Adjusted analysis		
	OR	CI	P	OR	CI	P
Age group						
<25	ref			ref		
25–44	2.2	[1.9–2.6]	< 0.001	2.1	[1.8–2.5]	<0.001
45+	1.1	[0.7–1.6]	0.6	1.1	[0.8–1.6]	0.5
Gender						
Male	ref			ref		
Female	1.9	[1.6–2.4]	<0.001	1.7	[1.4–2.2]	<0.001
Citizenship						
South African	ref			ref		
Zimbabwean	0.6	[0.4–0.8]	0.005	1.0	[0.7–1.4]	0.9
Do you live with family?						
Together	ref			ref		
Apart	0.6	[0.5–0.8]	<0.001	0.7	[0.6–0.9]	0.004
Marital Status						
Married	ref			ref		
Not married	2.1	[1.8–2.3]	<0.001	1.9	[1.5–2.3]	<0.001
Genital sores in past 3 months						
No	ref			ref		
Yes	1.7	[1.2–2.4]	0.005	1.4	[1.0–1.9]	0.05

Restricted to sexually active						
	Unadjusted analysis			Adjusted analysis		
Alcohol use						
Never	ref			ref		
< 1 per week	0.8	[0.6–0.9]	0.005	0.9	[0.8–1.1]	0.4
Once per week	1.2	[0.9–1.5]	0.2	1.3	[1.0–1.8]	0.05
> 1 per week	0.7	[0.5–1.0]	0.06	0.9	[0.7–1.2]	0.5

Results show that four variables contributed significantly to the model. People in the 25 to 44-year-old age category are at a significantly higher risk of being HIV positive than others, as are women, those who are unmarried and those who reported symptoms of genital ulcer disease.

Table 41: Associations between nationality and sexual behaviours and HIV risk factors

Percentage reporting:	South African	Swazi	Mozambican	Zimbabwean
Being married	28%	18%	20%	62%
2 or more partners in last yr	29%	44%	41%	26%
First sex under 15 years of age	19%	26%	23%	16%
Forced sex in last 12 months	13%	21%	18%	7%
Sex drunk in past month	16%	21%	23%	9%
Genital sores in last 3 months	12%	15%	15%	6%
Genital discharge in last 3 months	12%	15%	14%	7%

An interesting finding of the multivariate analysis is that being Zimbabwean is not, of itself, a protective factor against HIV. Certainly, Zimbabweans have a significantly lower HIV prevalence than other nationalities but this study has shown that this is because Zimbabweans are more likely than other nationalities to be married *and* they score lower on a range of risk factors, as table 41 shows. However, this analysis still clearly points to the fact that commercial farms are “spaces of vulnerability” where all those working there, regardless of nationality or mobility, are at high risk of HIV infection.

15. STUDY LIMITATIONS

Possibly the main limitation in this study was the inability to determine how much self-selection there was by potential participants prior to their arrival at the testing venue. Whilst efforts were taken to ensure that everyone sampled at least attended the briefing talk before deciding whether to participate or not, this situation could not be guaranteed. However, the fact that over 98 per cent of attendees did participate after hearing the introductory talk makes us believe that very few self-selected out of the study.

In KAPB studies there is always the risk of “social acceptability” bias meaning that there is possibly under-reporting of stigmatized behaviours. This is likely to be more pronounced in a setting such as this where the questionnaires were not self-administered. However, the training of questionnaire administrators to be non-judgemental and all the efforts to show participants that the study was entirely anonymous and confidential probably reduced the extent of bias. Also, there is no reason to believe that this bias will change over time and so although absolute estimates may be biased, the extent of change over time can still be used to measure degree of impact.

It may be argued that the questionnaire did not have ideal measures of mobility and migrancy. The four questions on these issues did perhaps not capture the nuances of mobility accurately or the complexity of the migration process and its impact on HIV vulnerability. In future studies more attention needs to be paid to improving measures of mobility.

For example, the question that asked: “Where does your family/spouse live when you work?” failed to differentiate whether the farm worker may have had a family in their home country/other area *in addition to* a local partner and/or family. A key issue here is the lack of clear definitions and a common understanding for terms such as “family” a “spouse”, a “partner” and being “married”. In a farm setting, the fact that partnerships are complex and fluid (e.g. farm workers may have a wife and family in their home area but live with a partner near the farm; see box 2) creates additional challenges in attempting to describe partnership arrangements. These difficulties are further exacerbated by the need to ask the same questions in multiple languages because translations may give rise to subtle differences in how individuals perceive the question. In future iterations of this KAPB study, these issues need to be investigated in more depth and more formative research is warranted on these issues.

It is difficult to comment on the extent to which these findings are generalizable to other farming communities. Firstly, these farms were not randomly selected but, instead, all farms that agreed to participate in the Ripfumelo project, participated in the study. It is not known whether these participating farms are systematically different from farms in the area that did not participate. Secondly, the nature of farm work and relations of production vary across South Africa and so it is not possible to determine whether these results are generalizable beyond these areas or not.

16. DISCUSSION

16.1 HIV Prevalence

The prevalence of HIV among the farm workers in this study is the highest published level among an employed population in the region that the authors are aware of. Most other studies of employed populations in the region (e.g. Colvin et al, 2007b) report that employed people tend to have a lower prevalence than the general population but as table 42 below shows, the opposite was the case in this study.

Table 42: Comparison of HIV prevalence in this study with results from other sources

Population	HIV Prevalence %	Comments
Malelane – all farm workers	49	Data from this study
Malelane – SA farm workers	51	Data from this study
15–49-year-old adults in Mpumalanga	23	HSRC 2008 study (see Shisana et al., 2009)
Tzaneen farm workers	26	Data from this study
Musina farm workers	28	Data from this study
15–49-year-old adults in Limpopo	14	HSRC 2008 study (see Shisana et al., 2009)
Swazi farm workers	52	Data from this study
15–49-year-old adults in Swaziland	26	UNAIDS 2009 update – Swaziland DHS 2006
Mozambican farm workers	42	Data from this study
15–49-year-old adults in Mozambique	13	UNAIDS 2009 update
Zimbabwean farm workers	28	Data from this study
15–49-year-old adults in Zimbabwe	18	UNAIDS 2009 update – Swaziland DHS 2005
Agricultural workers KwaZulu-Natal	27	Colvin et al. 2007a (sample size 2 263)
15–49-year-old adults KwaZulu-Natal	26	HSRC 2008 study (see Shisana et al., 2009)

The comparison table above shows that the prevalence of HIV among farm workers in this study is about double the prevalence among adults 15 to 49 years in the same province or country except for Mozambique where the prevalence is more than three times national levels. In a 2006 study (Colvin et al. 2007a) among farm workers in KwaZulu-Natal the prevalence of 27 per cent was similar to that reported by the 2008 HSRC study. This confirms the notion that commercial farms in Mpumalanga and Limpopo must be seen as “spaces of vulnerability”. (It would be useful to conduct a study to compare the conditions on the farms in KZN with those used in this study to identify factors that decrease the likelihood of the KZN farms being 'spaces of vulnerability').

16.2 What are the Key Risk Factors for Being HIV Positive ?

The bivariate analysis in this report found many factors associated with being HIV positive. However, great care has to be taken when interpreting such analysis because of the ever-present risk of confounding. This is the purpose of the multivariable analysis, namely to determine which risk factors at individual level are independently associated with HIV status and the multivariate analysis presented above. This approach provides useful insights that are discussed here.

Age is strongly associated with HIV status, with people in the 25 to 44 year category being more than twice as likely to be HIV positive when compared to the rest.

As with most population-based surveys in this region, HIV prevalence is higher overall among women than men. This difference is particularly marked in those under 29 years of age and, again, this is compatible with other population-based surveys (HSRC, 2002, 2005, 2008. See Shisana et al. 2002, Shisana et al. 2005, Shisana et al. 2009 respectively). However, whilst this is interesting descriptive data and is useful in programming, it tells us nothing about what is *driving* HIV infection in this population.

Another factor that is borderline associated with HIV is a history of genital sores being reported in the last month. This is not a surprise finding because HIV transmission and acquisition has been positively linked to the presence of an STI since the early 1990s. The importance here is that STI prevention and treatment interventions need to be implemented in this population both to lower the incidence of STIs and to impact on HIV transmission.

The multivariate analysis also shows that being married is protective against being HIV positive. This then begs the question: what is it about marriage that is protective?

Table 41 above shows that farm workers who are married tend to have less risky sexual behaviours and lower levels of self-reported symptoms of STIs. It is probable that it is this coming together of a lower risk profile among married people that lowers their risk of being HIV positive.

16.3 Nationality, Migrancy, Mobility and Partnerships

There is a complex relationship between HIV and nationality, measures of mobility and partnership arrangements in this study. Table 11 shows that HIV prevalence is *lower* among farm workers who are more “mobile”, and even in the multivariate analysis it was found that farm workers who *live apart* from their regular partners are at less likely to be HIV positive. These may seem counterintuitive findings at first glance but there are reasonable explanations.

Since fairly early on in the epidemic, migration was shown to play a significant role in the spread of HIV/AIDS (Nunn et al., 1995). It has been shown that migration and mobility can increase vulnerability to HIV infection (Quinn, 1994; Decosas and Adrien, 1997; Zuma et al., 2003) – both for those who are mobile and for their partners back home (Lurie et al., 2003).

However, more recently it has been argued that “patterns of vulnerability to HIV associated with migration may alter over time in large-scale, widely disseminated epidemics” (Mudandi, 2006). In the Mudandi study, after adjusting for age, education, marital status and location, there were no differences in HIV prevalence and sexual risk behaviour between future migrants and residents at baseline, for either sex. No significant differences in HIV incidence or sexual behaviour during follow-up were detected between rural-to-urban out-migrants and residents.

In this study, there were no strong associations between HIV prevalence or sexual behaviour *at the*

individual level and the various measures of mobility used or whether the employee was permanent or on contract. In other words, when comparing HIV prevalence and behaviour among migrants and non-migrants in this farming community, migrants per se were not more likely than non-migrants to be HIV positive or to report more risky sexual behaviour. However, it is clear that those working on commercial farms are much more likely to be HIV positive, compared with the prevalence statistics of the corresponding districts. Furthermore, HIV prevalence was highest in areas with higher rates of migration. It appears as if both migrants and those living in the host communities are at increased risk of HIV.

The implications of this are important. In recent years, there has been a shift in emphasis away from viewing migrants as “vectors” of disease and towards viewing the entire impacted community – migrants and non-migrants, those who are mobile and those who are not – as vulnerable. Williams et al. (2002) coined the phrase “spaces of vulnerability” in their article on migration and HIV/AIDS in South Africa to highlight the need to view the situation more holistically.

This approach also links with the concept originally proposed by Garnett and Whiteside which they called the “Jaipur Paradigm” (Garnett and Whiteside, 2002). These authors argued that societies were most vulnerable to HIV when there was a combination of poverty, social inequity and a lack of social cohesion. All these characteristics are typical of these farm settings where there is a low wage base and a substantial transient population who come to work on the farms for prolonged periods but usually without their spouses and families.

It has been apparent in Zimbabwe for about 10 years now that the HIV epidemic is declining substantially and this is supported by evidence of behaviour change (Lopman and Gregson, 2008). This study has also shown that HIV prevalence is lower in Zimbabweans and that they are more likely to be married and to have safer sexual practices.

Whilst being a migrant and being mobile may make people more vulnerable to HIV infection, there are many other factors at play that preclude a simple, causative association between being a migrant and being more likely to be HIV positive.

Table 43: Associations between nationality of farm workers and various measures of mobility

Variable	South Africa		Swaziland		Mozambique		Zimbabwe	
	No.	%	No.	%	No.	%	No.	%
Permanent	1 187	72	170	77	320	81	195	42
Contract	467	28	51	23	77	19	268	58
Live in compound	629	38	107	48	220	56	445	97
Live off the farm	1 037	62	115	52	176	44	14	3
See partner at least weekly	1 385	84	154	70	261	66	188	42
See partner less often	268	16	66	30	136	34	254	57
Live with “family”	1 105	67	136	62	245	62	171	39
Live apart when at work	554	33	83	38	152	38	273	61

Similarly high proportions of South Africans, Swazis and Mozambicans considered themselves permanent employees but only 42 per cent of Zimbabweans reported to be permanent. Also, almost all Zimbabweans lived on compounds but only about a third of SA citizens and around half of Swazis and Mozambicans reported living on compounds. However, although only 3 per cent of Zimbabweans lived outside of compounds, 42 per cent claim to see their partner weekly or more and 39 per cent claim to live with their families. This implies that many Zimbabweans live on compounds with partners and/or families. This again raises the question as to the definition of family/spouses understood by the respondents.

16.4 Comparison with National and Provincial Data

HIV prevalence levels among farm workers from this study were compared with HIV prevalence reported among adults in Limpopo and Mpumalanga provinces using the 2008 National Human Sciences Research Council (HSRC) survey (Shisana et al., 2009). Analysis of the HSRC data was restricted to include only sexually active, Black Africans so as to be comparable to the farm worker data. In both provinces, the HIV prevalence levels among farm workers is around twice that in the general population and these differences are significant.

Tables 44 and 45 compare various sexual behaviours for the same groups and show that farm workers are less likely to use condoms, more likely to have had multiple partners in the last year and were more likely to have reported symptoms of STIs in the last year. This reinforces the argument that commercial farms can be seen as “spaces of vulnerability”.

Table 44: A comparison of risk behaviour in Limpopo for adult, sexually active Africans as reported in the 2008 HSRC survey and this survey.

Factors		Limpopo (HSRC)		Limpopo (Musina + Tzaneen) SA Citizen	
		N	%	N	%
Ever had vaginal discharge/urethral discharge					
	Yes	10	2.3	41	6.6
	No	428	97.7	579	93.4
	Total	438	100.0	620	100.0
Ever had genital sores in last 12 months					
	Yes	9	2.1	53	8.4
	No	429	97.9	580	91.6
	Total	438	100.0	633	100.0
Number of sexual partners in last 12 months					
	Zero	4	0.9	33	4.7
	One	390	89.9	525	74.8
	Two or more	40	9.2	144	20.5
	Total	434	100.0	702	100.0

Factors		Limpopo (HSRC)		Limpopo (Musina + Tzaneen) SA Citizen	
		N	%	N	%
Number of sexual partners in last 12 months					
	Zero	49	11.2	51	7.6
	One	335	76.5	508	75.5
	Two or more	54	12.3	114	16.9
	Total	438	100.0	673	100.0
Condom use at last sex					
	Yes	241	66.6	328	51.7
	No	121	33.4	306	48.3
	Total	362	100.0	634	100.0
Ever had an HIV test					
	Yes	314	50.7	442	70.6
	No	305	49.3	184	29.4
	Total	619	100.0	626	100.0

Table 45: A comparison of risk behaviour in Mpumalanga for adult, sexually active Africans as reported in the 2008 HSRC survey and this survey.

Factors		Mpumalanga (HSRC)		Mpumalanga (Malelane) SA Citizen	
		N	%	N	%
Ever had vaginal discharge/urethral discharge					
	Yes	16	5.0	120	15.7
	No	305	95.0	642	84.3
	Total	321	100.0	762	100.0
Ever had genital sores in last 12 months					
	Yes	5.0	1.6	117	15.0
	No	317	98.4	662	85.0
	Total	322	100.0	779	100.0
Number of sexual partners in last 12 months					
	Zero	1	0.3	7	0.9
	One	286	89.1	505	64.4
	Two or more	34	10.6	272	34.7
	Total	321	100.00	784	100.00

16.5 Gender Differences

Just over half (54%) of study participants were women, of which 26 per cent claimed to be married compared to 38 per cent of men.

Most women were from South Africa (72%) whereas only 47 per cent of men were South African. Women were somewhat less likely to be permanent employees (65%) than men (72%) and less likely to live in compounds (44%) compared to men (60%). In comparison to men, female farm workers were more likely to live with their families (66% vs 55%) and to see their partners weekly or more frequently (80% vs 65%)

The multivariate analysis showed that being female was a significant and independent risk factor for being HIV positive, with 46.7 per cent of women being infected compared to 30.9 per cent of men. This difference was particularly striking in those under 30 years of age. This is contrary to most workplace studies where the prevalence among women is usually lower than among men (Colvin et al., 2007b). This may have to do with the high levels of inter-generational sex reported to be happening between older men and younger women, high levels of forced sex, and with relatively high levels of transactional sex reported among participants, together with the very low pay among these workers (between R800 and R1,000 per month [USD 108–135] for permanent workers and often less for seasonal workers who are paid per day), which does not bring them above the poverty line.

Regarding sexual behaviour, there was remarkable similarity between men and women in terms of age of first sex, condom use, experience of forced sex, condom usage and symptoms of sexually transmitted infections. There were not even very large differences in reporting of multiple partnerships although women always tend to report less in such studies.

On the following risk factors there were differences:

- 1) Women (10.1%) and men (23.5%) reporting having sex whilst drunk in last month;
- 2) Women (50.0%) and men (27.4%) reporting that their last sex partner was 10 or more years older than her or him.

Knowledge about and attitudes towards HIV were very similar between men and women.

There were no substantial or significant differences between men and women in terms of health status, financial stability, sense of community cohesion, access to services and quality of life. However, the high levels of forced sex reported by men merits further investigation.

Please see tables below for the gender breakdown of some of these measures.

Table 46: Measures of mobility of farm workers

	Male		Female		Total	
	No.	%	No.	%	No.	%
Stay during the week	1 273		1 518		2 791	
On the compound on the farms	754	59.2	662	43.6	1 416	50.7
In rented accommodation in a township	19	1.5	30	2.0	49	1.8
In my own home	492	38.7	820	54.0	1 312	47.0
In an informal settlement	5	0.4	5	0.3	10	0.4
Other	3	0.2	1	0.1	4	0.1

	Male		Female		Total	
	No.	%	No.	%	No.	%
Frequency see spouse/family	1 253		1 500		2 753	
Daily	697	55.6	1 062	70.8	1 759	63.9
At least once a week	115	9.2	140	9.3	255	9.3
Monthly	188	15.0	185	12.3	373	13.5
3 to 4 times a year	140	11.2	57	3.8	197	7.2
Less often	108	8.6	54	3.6	162	5.9
No response	5	0.4	2	0.1	7	0.3

Fewer women live on compounds than men and are more likely to live in their own homes. Women workers are more likely than men to see their spouses on a daily basis.

Table 47: Forced to have sex against will in the last 12 months by gender

	Male		Female		Total	
	No.	%	No.	%	No.	%
Been forced to have sex against will in last year*	1 085		1 276		2 361	
Yes	139	12.8	184	14.4	323	13.7
No	946	87.2	1 092	85.6	2 038	86.3

* Filtered by Yes for ever had sex and sex in last 12 months

Being forced to have sex is a big problem on the farms, with almost three in every twenty women having been raped over the past 12 months and 12.8 per cent of men also reporting being forced to have sex.

Table 48: Self-reported use of alcohol by gender

	Male		Female		Total	
	No.	%	No.	%	No.	%
Never drink	628	49.4	1 212	80.1	1 840	66.1
Occasionally, once in a while	308	24.3	147	9.7	455	16.3
Less than once a week	57	4.5	20	1.3	77	2.8
Once a week	189	14.9	101	6.7	290	10.4
More than once a week	79	6.2	26	1.7	105	3.8
Daily	9	0.7	7	0.5	16	0.6
Total	1 270		1 513		2 783	

Table 49: Self-reporting of having been drunk in the last month by gender

	Male		Female		Total	
	No.	%	No.	%	No.	%
Yes	522	45.1	195	14.8	717	29.0
No	635	54.9	1 123	85.2	1 758	71.0
Total	1 157		1 318		2 475	

Women drink substantially less than men and are much less likely to report being drunk.

Table 50: Sense of community cohesion on the farm by gender

	Male		Female		Total	
	No.	%	No.	%	No.	%
I have the opportunity to share thoughts, feelings and ideas with others on the farm	1 270		1 518		2 788	
Agree strongly	159	12.5	200	13.2	359	12.9
Agree	815	64.2	916	60.3	1 731	62.1
Unsure/no response	41	3.2	65	4.3	106	3.8
Disagree	222	17.5	293	19.3	515	18.5
Disagree strongly	33	2.6	44	2.9	77	2.8
I feel that the farm workers on our farm are a community who support each other	1 274		1 517		2 791	
Agree strongly	136	10.7	166	10.9	302	10.8
Agree	844	66.3	980	64.6	1 824	65.4
Unsure/no response	91	7.1	111	7.3	202	7.2
Disagree	174	13.7	215	14.2	389	13.9
Disagree strongly	29	2.3	45	3.0	74	2.7
I feel that I am a member of this community	1 276		1 521		2 797	
Agree strongly	256	20.1	262	17.2	518	18.5
Agree	806	63.2	946	62.2	1 752	62.6
Unsure/no response	55	4.3	75	4.9	130	4.7
Disagree	137	10.7	203	13.4	340	12.2
Disagree strongly	22	1.7	35	2.3	57	2.0

	Male		Female		Total	
	No.	%	No.	%	No.	%
I feel that people on this farm are able to discuss problems that affect everyone	1 274		1 519		2 793	
Agree strongly	166	13.0	194	12.8	360	12.9
Agree	761	59.7	875	57.6	1 636	58.6
Unsure/no response	106	8.3	130	8.6	236	8.4
Disagree	213	16.7	275	18.1	488	17.5
Disagree strongly	28	2.2	45	3.0	73	2.6
I feel that people on this farm can solve problems that they discuss	1 275		1 518		2 793	
Agree strongly	185	14.5	223	14.7	408	14.6
Agree	743	58.3	841	55.4	1 584	56.7
Unsure/no response	112	8.8	134	8.8	246	8.8
Disagree	198	15.5	271	17.9	469	16.8
Disagree strongly	37	2.9	49	3.2	86	3.1
I feel that people on this farm are willing to work together to make life better on the farm	1 274		1 517		2 791	
Agree strongly	225	17.7	273	18.0	498	17.8
Agree	820	64.4	962	63.4	1 782	63.8
Unsure/no response	72	5.7	96	6.3	168	6.0
Disagree	130	10.2	153	10.1	283	10.1
Disagree strongly	27	2.1	33	2.2	60	2.1
I feel that the other people on this farm can be trusted	1 272		1 518		2 790	
Agree strongly	263	20.7	267	17.6	530	19.0
Agree	620	48.7	711	46.8	1 331	47.7
Unsure/no response	68	5.4	117	7.7	185	6.6
Disagree	275	21.6	339	22.3	614	22.0
Disagree strongly	46	3.6	84	5.5	130	4.7

16.6 Focus on Malelane

Malelane has the highest prevalence of HIV (49%) when compared to Tzaneen (26.3%) and Musina (28.1%); this association was significant in the multivariate analysis. This can probably partially be attributed to the fact that the community prevalence of HIV is higher in Mpumalanga than it is in Limpopo. However, this higher prevalence is likely also to be driven by the fact that the following HIV risk behaviours were reported more frequently in Malelane than the other sites:

- Over half participants are married in Tzaneen and Musina but only 14 per cent are married in Malelane.
- Malelane has almost twice the number of reported multiple partners over the last year.
- Farm workers in Malelane are more than twice as likely to have been forced against their will to have sex in the last year.
- Farm workers in Malelane are about twice as likely to have had sex whilst drunk in the last year.
- Farm workers in Malelane are about twice as likely to have experienced symptoms of an STI in the last year.

These results indicate that farm workers in the Malelane region tend to engage in riskier sexual behaviours than the other areas.

Table 51: HIV prevalence among farm workers in Malelane by nationality

Nationality	No.	HIV+	%
South Africa	941	483	51.3
Swaziland	220	115	52.3
Mozambique	373	161	43.2

Although Mozambicans had the lowest HIV prevalence when compared to Swazis or South Africans, there were no differences between the nationalities in terms of sexual behaviours, knowledge levels regarding HIV or access to HIV-related programmes and services. There were also no differences in personal financial status, food security, sense of cohesion on and off the farm or self-perceived quality of life. The lower HIV prevalence among Mozambicans is probably because they come from a country with a lower background prevalence.

The finding that knowledge levels, stigma and all other factors are similar across the nationalities means that there is no need to target any particular group in terms of prevention activities.

There was a remarkable consistency in HIV prevalence and in all other variables between participants who reported that they were contract employees and those who were permanent.

There were no significant differences in any of the measured variables when comparing employees who lived on farm compounds and those living off the farm except⁴ that 39 per cent of those living in compounds reported being drunk in the last month compared to 27 per cent of those living off farms ($p < 0.001$). This could be due to the lack of other recreational and leisure activities on the compounds.

⁴ Also workers living on farms were more likely to engage in workplace-arranged sports activities but this is an obvious function of their living arrangements and has no significance.

17. IMPLICATIONS OF THE RESULTS

This study tried to measure the impact of migration and mobility on HIV status and on sexual practices. In order to determine whether this population was made up of migrant workers (defined as persons who freely choose to move location within a country or across an international boundary for the reasons of “personal convenience” and without intervention of an external compelling factor, IOM, 2004), the study looked at issues such as the frequency with which the participants saw their partner, whether they lived with or apart from their families and whether they were permanent or contract workers.

This study found the following:

- 1) HIV prevalence is similar among all participants, migrants and non-migrants.
- 2) All farm workers surveyed seem to be more vulnerable to HIV infection when working on farms in South Africa compared to the general population in the corresponding districts, and therefore commercial farms can be considered to be “spaces of vulnerability”.
- 3) It is not possible to pin-point one factor that is causing this high rate of HIV infection on these farms. Rather, a multitude of factors, when compounded together (such as multiple and concurrent partnerships, transactional sex, irregular condom use, presence of STIs and/or TB, high levels of sexual violence, and others), seem to be the cause of the high HIV prevalence.
- 4) A large proportion of commercial farm workers are made up of migrants from neighbouring countries. The HIV prevalence amongst farm workers is double and in the case of Mozambique is triple the national average of their countries of origin (national level data in Mozambique shows a 13 per cent HIV infection rate, whereas the Mozambicans in this survey showed a 41.5 per cent infection rate [UNAIDS, 2009]). Neighbouring governments need to be made aware of these statistics so that appropriate prevention, care and treatment can be provided to their returning nationals and their families.

18. MAIN FINDINGS AND RECOMMENDATIONS

18.1 Main Findings of the Study

- 1) **High HIV prevalence:** This study has shown that there is a very high prevalence of HIV among farm workers. Within the 30 to 39-year-old age group, over half of employees are HIV positive. It is of concern that people who are living with HIV, including those who know that they are HIV positive, are still engaging in risky sexual behaviour that is likely to transmit HIV to their partners.

As more and more of these infected employees become increasingly immune-compromized, they will become sicker and less productive unless they receive treatment. If a substantial number of employees receive treatment, productivity is likely to be impacted upon negatively in the short term because of the need to attend the clinic regularly. However, long-term gains in productivity are likely to accrue if a substantial proportion of those infected receive treatment.

- 2) **High frequency of risky sexual behaviour:** In spite of the high HIV prevalence, farm workers are engaging in high-risk sex including perpetrating and/or experiencing sexual violence, having multiple partners, engaging in age-disparate sex, trading sex for resources and not using condoms consistently. All these factors facilitate HIV transmission. Whilst almost everyone knows about HIV, detailed knowledge about prevention is poor.
- 3) **HIV, migration and mobility – a complex relationship:** The data from this study shows that there is a high HIV prevalence among both migrant and non-migrant workers, indicating that these farms are “spaces of vulnerability”.
- 4) **High levels of risky sexual behaviour and prevalence in Malelane:** The reported prevalence of a range of risky sexual behaviours in Malelane is double that reported in the other two areas. The prevalence of HIV in Malelane is also higher than any other region.
- 5) **A conducive environment for HIV interventions:** Most employees believe that management is taking HIV/AIDS issues seriously (more than 80% in Tzaneen and Malelane) and most have been exposed to HIV-related programmes. Employees also look to farm management to deal with problems arising on the farms. This indicates that there is a degree of trust shown towards management by workers.
- 6) **Other health issues:** Whilst the impact of HIV may dwarf the impact of other health issues, these should not be neglected. Tuberculosis and Sexually Transmitted Infections are of serious concern and, when present in the body, increase the vulnerability to HIV infection. Furthermore, the rate of co-infection between TB and HIV is high amongst this population (over 58%).
- 7) **Sexual and Gender-based violence:** The levels of reported rape/forced sex among this population are high, with 12.8% males and 14.4% females experiencing forced sex in the last year. In Malelane, these figures are even higher with 18% of those co-habiting with a partner reporting being forced to have sex in the last year. Those who reported having been forced to have sex were more likely to be infected with HIV than those who did not (48% versus 39.4%).
- 8) **Alcohol use:** Whilst two thirds of farm workers claim never to drink alcohol, almost 30 per cent admit to being drunk in the last month, which indicates that binge drinking may be a problem. Being drunk is more common among men and among those living in compounds. Farm workers in Malelane are twice as likely as those from other areas to report having had sex whilst being drunk.

18.2 Recommendations

18.2.1 Regional Policy-related Recommendations

- IOM and other regional stakeholders should advocate for cross-border dialogue on the development of government programmes that would better prepare migrant workers for the health risks and work conditions they will face in neighbouring countries, and devise a concrete plan to ensure proper testing and treatment of HIV-positive returning migrants and their families.
- IOM and other regional stakeholders should advocate for regional policies that are cognizant of “spaces of vulnerability”.
- At the regional level, SADC should ratify the SADC Draft Policy Framework on Population, Mobility and Communicable Diseases (SADC, 2009).

18.2.2 National Policy-related Recommendations

- Government health policies and programmes should be cognizant of migrants and migration-affected communities in order to support more effective health service delivery. For example, seasonal workers should be included in district health plans so as to ensure sufficient health resources are available at the local level.
- The criminal justice system needs to promote awareness on sexual and gender-based violence in the farms and the surrounding communities, ensure that victims have access to authorities to report sexual and domestic violence and ensure access to PEP, regardless of migrant status.
- Furthermore, the development and implementation of workplace policies and programmes that comply with existing legal frameworks needs to be encouraged so that support for access to health care is not solely dependent on the goodwill of the farm managers/owners.

18.2.3 Programme-related Recommendations

- **Test, encourage positive living and treat:** Government needs to take measures to increase the uptake of VCT and to facilitate access to HIV treatment programmes, including PEP and PMTCT.
 - **Positive prevention:** A programme aimed at reducing HIV transmission for and by HIV-positive people should be devised and implemented.
- **HIV/AIDS education:** Customized and appropriate behaviour change programmes should be devised and implemented for and with farm workers and should have a strong focus on sexual and domestic violence. Social and behavioural change communication strategies should be employed to address intricate issues that impact on sexual practices and behaviours. Dialogue on cultural and gender issues should be facilitated to unearth barriers to behaviour change and find common solutions. Myths and misconceptions surrounding the transmission of HIV (including whether mosquitoes can transmit the virus) need to be included in such programming.

- **Empower Change Agents:** These personnel could be key in driving behaviour change on farms but to do so they need to be adequately empowered by providing proper training, equipment and ongoing support. The Change Agents programme should be an integral part of a workplace response, and their role should be seen beyond just peer educators but rather enablers of a broader change process which will impact on individual behaviour change.
- **Disseminate information and facilitate dialogue:** National, provincial and local governments, ministries of health and workers in this area need to know about the high rate of HIV infection and of sexual violence and find solutions to reduce farm workers' risk to both.
- **Invest in evidence-based prevention and care, support and treatment programmes:** Although these interventions are needed in all areas, the situation is particularly severe in Malelane and should be made a priority by government.
- **Tuberculosis and Sexually Transmitted Infections:**
 - **TB:** (1) Inform the Department of Health of the high levels of HIV/TB co-infection on farms; (2) Facilitate interventions that integrate prevention and treatment of HIV and TB; (3) Promote adherence of farm workers to HIV/TB treatment through social and behaviour change communication programmes.
 - **STIs:** STI prevention and treatment interventions need to be implemented in this population both to lower the incidence of STIs and to impact on HIV transmission. (1) Inform the Department of Health of the high levels of STIs on farms; (2) Facilitate interventions that integrate prevention and treatment of HIV and STIs; (3) Promote adherence of farm workers to HIV/STI treatment through social and behaviour change communication programmes.
- **Sexual and gender-based violence:** Farm supervisors, managers and workers, as well as police and healthcare providers should be sensitized on a regular basis about sexual and gender-based violence. The police and the criminal justice system, both formal and informal, need to be engaged in developing responses to very high levels of sexual violence and a range of NGOs need to be brought in to assist with this. There is an urgent need to educate about PEP and PMTCT, amongst many other issues. Information campaigns should be carried out on the availability and effectiveness of PEP and PMTCT as a top priority.
- **Food security:** IOM should build partnerships with other stakeholders such as the Department of Agriculture and the Department of Social Development to address food security issues amongst this population.
- **Alcohol use:** IOM should develop interventions on the farms that target binge drinking. One approach would be to introduce alternative forms of alcohol-free entertainment and to provide opportunities for sporting activities.
- **Do not stigmatize migrant workers:** It should be emphasized in prevention interventions that the problem of HIV spreading is not primarily because of migrant workers coming in and spreading the virus. Awareness-raising should be carried out with farm workers, home and host communities and with farm supervisors and management to increase the understanding of health in the context of migration and how the dynamics of migration and mobility increases health risks and vulnerability amongst the affected populations (home and host communities).

18.2.4 Research-related Recommendations

- **Repeat this study:** IOM should use this baseline data to track changes over time. Repeat this study every few years, possibly on a smaller scale and without HIV testing, in order to track trends in knowledge, behaviour and attitudes of farm workers.
- **Spaces of vulnerability:** IOM and other stakeholders should conduct more in-depth research on these farms in order to understand and pin-point the factors that result in these sites becoming “spaces of vulnerability”. This will allow for more targeted and effective programme strategies to reverse and/or lessen the risk of HIV infection for commercial farm workers.



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20. APPENDICES

20.1 Appendix 1: The Ripfumelo Project Model

The overall objective of the Ripfumelo project is to reduce HIV vulnerability of farm workers in various districts of South Africa by implementing a coordinated, evidenced-based and focused HIV and AIDS prevention and care program. Building on experiences and lessons learnt from IOM pilot projects in the southern Africa, the Ripfumelo project aims to provide sustainable prevention and care services to farm workers by building the technical capacity of local implementing partners (IPs); strengthening partnerships among and with local, provincial, and national governmental agencies; promoting public/private partnerships; and developing a network of stakeholders working specifically on HIV-related issues within the commercial agriculture sector.

The overall anticipated results of the project are a reduction in the HIV incidence in the targeted areas, and a mitigation of the impact of AIDS on farm workers and their families and communities.

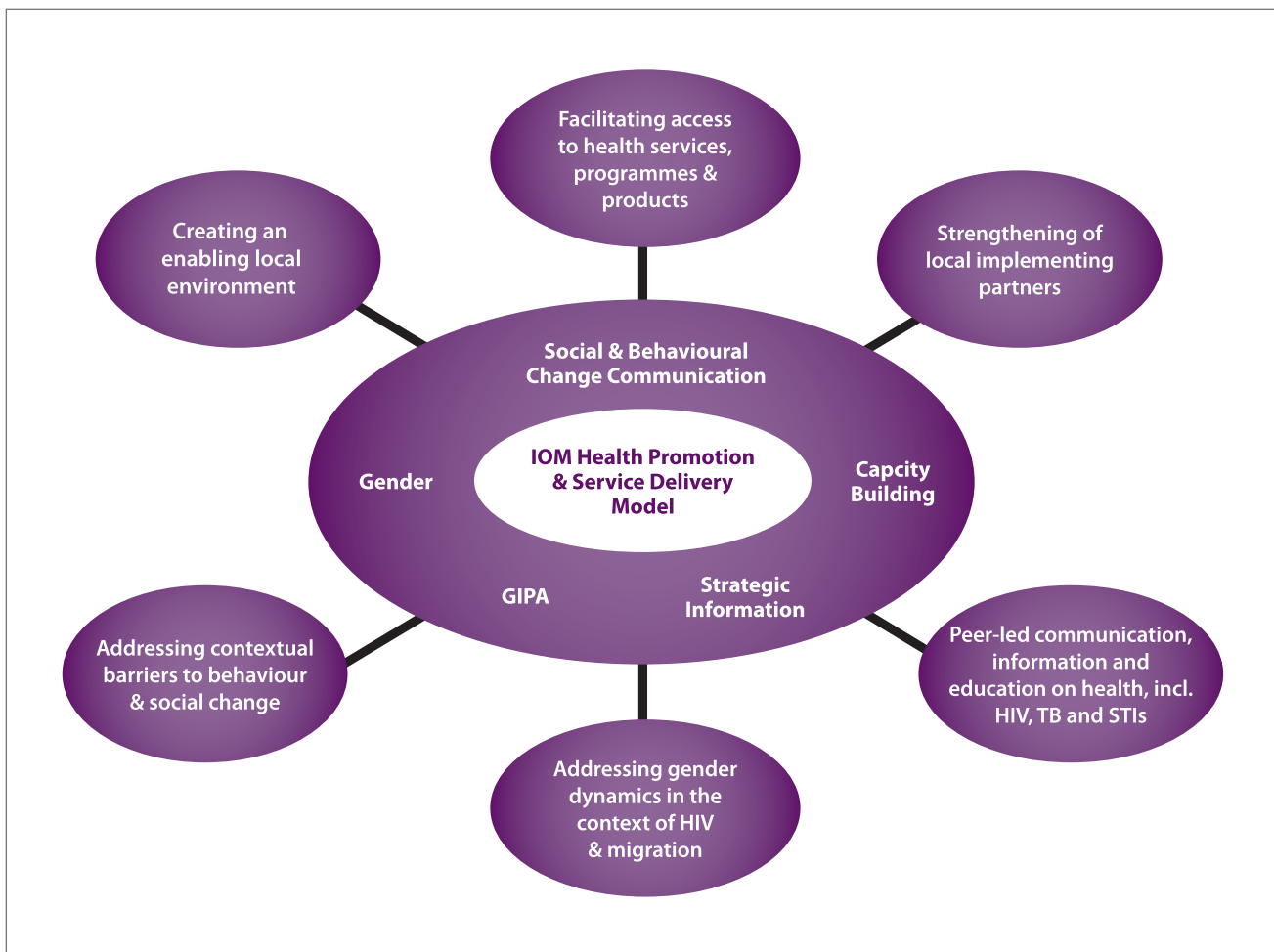
The Ripfumelo project

- targets seasonal, temporary, and permanent farm workers, whether South African or foreign, documented or undocumented, in the commercial agricultural areas of Hectorspruit/ Malelane (Lowveld, Mpumalanga), Makhado/Musina (Vhembe, Limpopo), and Hoedspruit and Tzaneen (Mopani, Limpopo).
- targets approximately 20,000 farm workers on about 120 commercial farms

The project implements the IOM Health Promotion and Service Delivery Model is based on health promotion and community development theory and strives to address both the contextual and individual barriers to behaviour change that impact on an individual's HIV vulnerability. The model provides a framework for project design and implementation rather than using a prescriptive approach that does not take into account the local context. It includes:

1. *Facilitating access to health services, programmes and products:* This includes interventions that address farm workers' ability to access health services and can include addressing health providers' attitudes, referral systems, support groups/ post test clubs, continuum of care program, and home/community based care.
2. *Strengthen local implementing partners:* IOM seeks to ensure that partners (a) have the capacity to deliver and (b) are strengthened so as to assist in sustaining project interventions in the longer term.
3. *Peer led communication, information and education:* Utilizing findings from assessments and research partners build a cadre of local change agents⁵. Change Agents are the core of the communication and empowerment process and play a critical role in enabling and promoting dialogue amongst their peers, they (a) disseminate HIV/health related information and promote adoption of healthier and positive behaviors and practices amongst their peers and communities, (b) through dialogue with peers the identify challenges,

⁵ Change agents are a group of carefully selected farm workers, who then undergo training which covers basic understanding of HIV/AIDS and other health problems such as TB and sexually transmitted infections, overall health promotion. Their major role is to facilitate communication within the workplace and create a platform to explore socio-cultural issues that impact on sexual behaviours and practices in the context of HIV that addresses social issues. They are a prototype of the new generation peer educators.



(c) develop strategies to address the challenges; and (d) promote action for change. This bottom up led approach ensures ownership and that the programme directly responds to local conditions.

4. *Gender dynamics:* The role in gender within the context of HIV has been well-established through various studies. In order to address this gender is mainstreamed throughout all interventions, however specific gender focused activities are undertaken such as addressing issues such as gender based violence, gender socialization and the role of men in society, men's health seeking behavior and empowering women and girls.
5. *Contextual barriers to behavior and social change:* An individuals behavior is affected by a number of factors and in order to provide a platform to support behavior change interventions that address some of these factors and promotes and support positive factors are included. Interventions may be related to recreational activities, accommodation, transport, life skills (e.g. ABET), personal development, income generation, access to grants, and identification documents.
6. *Creating an enabling local environment:* When working within a community it is important to link interventions to the local policies (for example workplace wellness policies, municipal or district plans) and where local policies and programmes are not in place advocate and support the establishment of relevant policies, this will promote local ownership and

sustainability. For instance Change Agents bridge a communication gap between workers and employers with regards to developing and promoting a healthier work environment that takes into consideration the needs of both parties.

20.2 Appendix 2: Ethics Approval Letter from the University of the Witwatersrand.

<p>Human Research Ethics Committee (Medical) (formerly Committee for Research on Human Subjects (Medical)) Secretariat: Research Office, Room SH10005, 10th floor, Senate House • Telephone: +27 11 717-1234 • Fax: +27 11 359-5708 Private Bag 3, Wits 2050, South Africa</p>	<p>University of the Witwatersrand, Johannesburg</p> 
<p>7 February 2010</p>	
<p>Dr Mark Colvin Maromi Health Research Private Bag X07 DALBRIDGE 4014</p>	
<p>Dear Dr Colvin</p>	
<p>RE: Protocol M060438: 'HIV Prevalence and Knowledge, Attitude and Practice Survey'-Application for Extension</p>	
<p>This letter serves to confirm that the Chairman of the Human Research Ethics Committee (Medical) has reviewed and approved your request to extend the abovementioned study to government and private sector institutions as detailed in your letter dated 25 January 2010.</p>	
<p>Thank you for keeping us informed and updated.</p>	
<p>Yours sincerely,</p>	
	
<p>Anisa Keshav Secretary Human Research Ethics Committee (Medical)</p>	

20.3 Appendix 3: Key challenges identified prior to study initiation and solutions

Securing 'buy-in' from farm owners and farm workers

The greatest challenge faced in trying to ensure high quality data from this study was to obtain high levels of participation from farm owners and farm workers. If a significant proportion of sampled farms and/or employees refused to participate, this may introduce bias into the study and impact negatively on the validity of the results.

Solution: A substantial amount of energy will be directed at obtaining active support of employers and employees at each farm. To this end the study developed a detailed communication and engagement strategy aimed at attempting to convince all stakeholders that this study will be scientifically valid, will not disrupt production significantly, will contribute towards the sustainability of the sector and will be conducted in an ethical manner.

Working with a vulnerable population

Farm workers, particularly migrant workers and those from outside South Africa, may be considered a "vulnerable" population. There is the potential, because of the power dynamics that often exist on farms that employees will feel "obliged" to participate if the farm owner agrees to allow access.

Solution: Care will be taken during the communication phase of the study to engage with farm workers and their representatives in order to ensure that they are aware of the voluntary nature of this study. In short, measures were taken to ensure that participants give genuine, informed consent.

Multiple languages high levels of illiteracy

It is probable that farm workers will speak a variety of languages and will have high illiteracy levels.

Solution: The study identified the languages that are used locally and ensured that the questionnaires were adequately translated into each language. Once the English questionnaire was finalised, it was translated, back-translated and piloted. Because of the low literacy levels, questionnaires were administered by a facilitator rather than self administered.

Standardised methods needed

– "Standard Operating Procedures"

In a multi-site study such as this one, it is imperative that all data gathering activities are conducted in a standardised and consistent manner. If this is not done and different definitions and methods are used at different sites, the data may not be comparable across sites and the validity of the study will be seriously compromised. In addition, because it is envisaged that the studies will be repeated for surveillance purposes to monitor and assess HIV prevalence and behaviours over time, it is important that similar methods are used in the repeat surveys even if different organisations undertake the research.

Solution: Care was taken to develop a detailed Study Protocol and a set of corresponding Standard Operating Procedures (SOPs) to guide all research activities. Each SOP described in detail exactly how the activity was conducted and who would do what. Existing SOPs were customised for this study.

Table 1: A list of customised SOPs included at least the following:

Communicating with farm owners and employees
Administration of questionnaires
Questionnaire dispatch and receiving
Documenting sampling procedures and monitoring participation levels
Obtaining dry blood spots and/or saliva specimens
Labelling, packaging, dispatch, transport, receiving and archiving of specimens
Testing of specimens for HIV
Universal Precautions
Data entry, cleaning and management

Poor access to health care

Experience with these studies has shown that a significant proportion of participants choose to know their own HIV status by taking up the option of VCT. It is for this reason that we ideally like to provide VCT as a service for the duration of the study. However, regardless of whether we supply the VCT or participants are referred externally, they need to be linked to health care services after testing. Our concern is that there may be geographic and financial obstacles to accessing health services. Employees may also not be able to take time off work to attend. Finally, foreign workers may not be eligible for certain services.

Solution: In consultation with IOM and other stakeholders, a protocol for managing the VCT and referral process was developed so that farm workers were able to access what is available to them.

20.4 Appendix 4: Provision of Voluntary Counselling and Testing for HIV

When conducting HIV prevalence studies, ethical approval is contingent on the researchers providing VCT to study participants. In this study, the IOM implementing partners at each site arranged for NGOs to provide VCT on the farms for the duration of the study.

Table 1. Numbers of farm workers undergoing VCT and HIV positivity rates.

Area	Number tested	Number HIV+	% HIV positive
Tzaneen	305	48	15.7
Malelane	769	317	41.2
Musina	326	62	19.0
Total	1 400	427	30.5

As is seen from the above table, a total of 1400 farm workers chose to undergo VCT on their farms. This was a very high uptake and is testimony to the preliminary work done by IOM implementing partners in preparing the farm workers. This high uptake means that this exercise was not only a research study

but was also an important HIV prevention intervention. However, it must also be recognised that there are now and additional 427 employees who are aware that they are HIV positive. It is important that their needs for ongoing counselling and access to treatment services are facilitated by the farm owners, managers and the IOM implementing partners.

25.5 Appendix 5: Quality Assurance Measures

HIV Testing – Quality Assurance

The Team Leader will have the overall responsibility for ensuring that the DBS specimens are collected from testing sites, couriered safely and processed by the laboratory appropriately. The testing laboratory will be Global Laboratories based in Merebank, Durban. We have a long history of working with this laboratory on various sero-prevalence studies on a national level including all the national HSRC community-based studies and more than 40 workplace studies undertaken over the last 15 years.

Global has SANAS (South African National Accreditation Services) accreditation to conduct a wide variety of tests including HIV tests on DBS and is ISO 15189 compliant. Global participates in international quality assurance programmes and there is a quality control system built into each HIV test kit.

In addition to the above, the following steps will be taken to ensure quality of HIV results:

1) Training will be provided based on an existing manual and a presentation to all staff taking specimens, and it will include the following topics:

- Required supplies
- How to collect and dry DBS and/or saliva
- How to package and store DBS and/or saliva
- What constitutes a valid and invalid DBS and/or saliva

This will be followed by a practical session of taking DBS and/or saliva following the SOP for collection and sharps disposal. A reputable company will be used for the purpose of disposing of the sharps.

2) Dried blood spot kits.

These are pre-packed by the laboratory to ensure all the correct equipment is used and that no contents are expired.

3) Laboratory testing for HIV.

This will be done using accredited test kits and in accordance with SANAS accreditation criteria. The following tests will be used

- Screening assay - Vironostika Uniform II Plus O – semi-automated (A1)
- Second test – Siemens Bayer HIV ½ fully automated chemilumenscent assay (A2)

- Third tests – Elecys 2010 – Roche Diagnostics for indeterminants (A3)
- 5% will be retested as internal quality control (A2) tests will be used

We have a testing algorithm but there is not the space to include it here.

4) Quality control programmes: internal and international

- Kit controls will be run on every 96 well plate
- Center for Disease Control (US) DBS (low, medium, high) will be run in batches
- NEQAS United Kingdom (Collindale) international QC programme
- Repeat testing of 5% of the samples

5) Results transfer

- Results will be transmitted electronically on excel spreadsheets to the Team Leader at regular intervals
- All persons included in the study will be provided with a unique bar code number

6) Storage of samples.

All samples will be stored at -20C for the duration of the study and thereafter for 5 years before disposal. This will allow for retesting should there be dispute about the reliability of test results. Samples kept thus could also be used for HIV incidence testing because this is also an HIV test for which consent has been provided. No other testing will be done on specimens.


Data management and analysis

Quality control in any study is an ongoing process and is not left to the end of the study. The goal is the identification of errors or problems as close to the point of data collection as possible. Thus intervention and correction can be made quickly and future problems averted.

Quality control in the field

Quality control in the field is the responsibility of the team coordinators and field team supervisors. The supervisors compile a register of potential respondents (i.e. farm worker list), indicate how respondents are sampled; ensure that respondents are selected according to the agreed sampling protocol and check the completed questionnaires for obvious errors to ensure that all required fields are completed. A record needs to be kept of those respondents who refuse to complete the questionnaire as well as provide a specimen, and those who refuse to provide a specimen. Upon completion the supervisors will provide:

- Register of all potential respondents with any available demographic data
- Summary of the refusal rate
- List of all completed questionnaires
- List of all specimens taken.

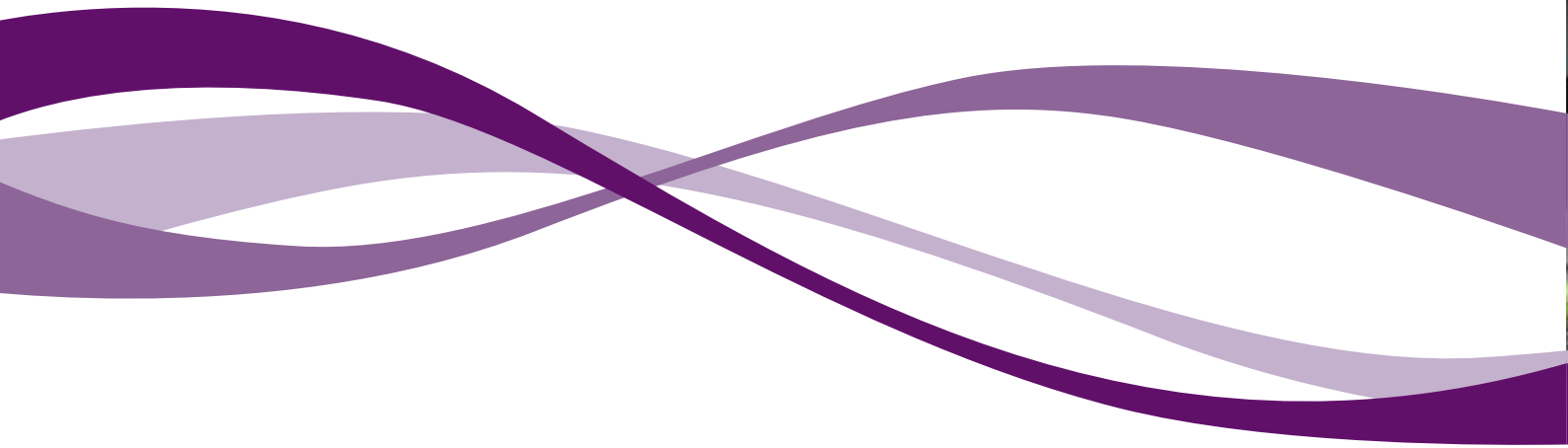


A copy of these lists will be sent to the data manager along with the questionnaires at regular intervals. A copy of these lists will also be sent to the lab along with the specimens.

Quality control at data management offices

The next line of quality control occurs at the data management office. Forms come into the data management office and are immediately checked against the accompanying list. A tracking log of all forms will be maintained including date received and date captured. Weekly reports on the number of forms received and entered will be produced and reconciled against what is expected. Data will be double entered and verified by a professional data-capturing company.

Data management will also include liaising with the laboratory to ensure that specimen results are received. As specimen results are received, they will be merged into the existing database of questionnaires. Any queries, such as duplicate specimens or incorrect bar codes will be recorded on a query log and go back to the field for action.



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