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Republic of Malawi

Report of the Malawi Triangulation Project:

**Synthesis of Data on
Trends in the National and Local HIV Epidemics
And
The Reach and Intensity of Prevention Efforts**

Process, Key Findings, and Recommendations



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ACRONYMS

Including stakeholders and description of their roles

ART	Antiretroviral therapy
BLM	Banja La Mtsogolo
CDC-GAP	United States Centers for Disease Control and Prevention Global AIDS Programme
DHS	Demographic and Health Survey, conducted every four years in Malawi by ORC- Macro.
MACRO	Malawi AIDS Counselling and Resource Organisation
MKAPH	Malawi Knowledge, Attitudes and Practices in Health survey
MSF	Medicine Sans Frontieres
NAC	Malawi National AIDS Coordinating Agency
NSO	National Statistics Office, Malawi
PLWHA	People Living with HIV/AIDS
PMTCT	Prevention of mother-to-child-transmission
PSI	Population Services International
UNAIDS	The Joint United Nations Programme on HIV/AIDS
UCSF-IGH	University of California, San Francisco's Institute for Global Health
VCT	Voluntary counselling and testing
WHO	World Health Organization

EXECUTIVE SUMMARY

Methods and Objectives: “Triangulation” is the synthesis of data from multiple sources to strengthen our understanding of complex health issues and make evidence-based public health decisions. Triangulation was applied to data from Malawi to answer two over-arching questions:

- 1) Has HIV prevalence (incidence) increased, decreased, or remained the same in Malawi, 2000-2005?
- 2) What is the reach and intensity of HIV prevention programs in Malawi from 2000 to 2005?

Process: The Malawi Triangulation Project was carried out from April to September 2006. The project was launched with a stakeholders’ meeting to prioritize questions relevant to Malawi, identify sources of data, and create a task force. Four months were devoted compiling and analyzing data. Over 100 independent sources of information on the HIV epidemic in Malawi were found, including surveillance data, quantitative and qualitative research studies, and programmatic reports. A final workshop was held in Lilongwe in September to interpret the data, conduct training on the methods of triangulation, and make recommendations.

National Findings: National data indicate a decline in the HIV epidemic in Malawi and an increase in the reach and intensity of prevention efforts from 2000 to 2005. This assessment is based on overall improving trends in HIV prevalence and prevalent syphilis, sexual risk behavior (abstinence, risky behavior, and condom use), and scale-up of prevention programs. However, HIV prevalence appears to be decreasing primarily in semi-urban areas while there is no concomitant decrease in urban and rural areas. Given the majority of Malawians resides in rural areas, a relative shift in the epidemic towards the rural areas may ultimately spell an increase in HIV infections overall. Moreover, any declines in HIV prevalence appear to be recently slowing.

Regional Findings: Further examination of data distinguished six regional epidemic patterns:

- 1) **Urban North** – The epidemic is characterized by declining HIV prevalence, improvement in risk behaviors, and good prevention program quality and coverage.
- 2) **Rural North** - HIV prevalence is relatively low; however, there has been no decrease to a slight increase in recent years. This worrisome trend is corroborated by high and/or increasing risk behaviors in men and low access to prevention in women.
- 3) **Urban Center** - HIV prevalence has decreased; however, the decline may be recently slowing. Indicators of risk behaviors and prevention coverage are mixed.
- 4) **Rural Center** - HIV prevalence is relatively low, but may be level to increasing in recent years. Risk behaviors are relatively low and/or improving in some areas while high in others.
- 5) **Urban South** - HIV prevalence is decreasing but remains the highest in the country. Some risk behaviors are improving; others remain high.
- 6) **Rural South** - HIV prevalence is relatively high and is level to increasing. Risk behavior indicators are improving, but some remain very high.

Case Studies of Local Epidemic Patterns: The workshop further examined indicators at the district level, qualitative research studies, and prevention program data. Eight case studies were elaborated to describe local epidemic trends and prevention efforts:

- 1) **Prevention success in areas of high educational status** – Data from parts of the Urban North describe decreasing HIV prevalence driven by a high quality prevention programs in an educated population with good infrastructure. High condom use and teen abstinence and low prevalence of non-cohabiting partners illustrate the impact. The pattern was found in Mzuzu, Nkhata Bay, and Rumphu but may apply to other areas with good infrastructure and high education.
- 2) **Rising HIV prevalence in mobile male populations** – Data from areas intersecting the Tanzanian border and northern lake area of the Rural North indicate rising HIV prevalence driven by risk behaviors of mobile male populations with disposable income. The pattern is characterized by high levels of unprotected sex with non-cohabiting partners. HIV risk behavior along international borders may also be occurring in areas of the South and Center.
- 3) **Rising HIV prevalence in the context of gender imbalances** – Data from areas of the Rural North highlight negative impacts of high inter-spousal age gaps, poor female support systems, and low negotiation skills on women's HIV knowledge and risk. The pattern may apply to other segments of Malawian female society with low options and social support.
- 4) **Slowing declines in HIV prevalence** – Data from areas of the Urban Center suggest that declining HIV prevalence has slowed in recent years. The pattern is characterized by only slight improvement in risk behaviors, with continued low reported access and uptake of prevention. The majority of the data originated from Lilongwe; however, the slowing of gains in prevention may apply to other urban areas of Malawi.
- 5) **Prevention success in areas with good quality prevention programs** – Data from the northern part of the Rural Center show HIV prevalence stable in association with good quality prevention programs with adequate monitoring and evaluation. Data were available primarily from the Kasungu district and parts of Dowa, Ntchisi and Mchinji, but the pattern may pertain to other areas where good quality, intensity, and reach of prevention programs have been sustained.
- 6) **Rising HIV prevalence in areas with weak prevention efforts** – Data from the southern part of the Rural Center paint a worrisome picture of rising HIV prevalence resulting from scant and poor prevention programs with high-risk behavior and low basic HIV knowledge. Data were available from the Dedza district, but a similar pattern is likely to pertain to many rural areas of Malawi where prevention efforts have been absent and/or poorly monitored.
- 7) **Persistently high HIV prevalence in economic hotspots** – Data from the Urban South demonstrate persistently high HIV prevalence with little or no decline in areas of high economic activity such as rural estates, borders, and urban manufacturing and marketing zones. Large numbers of mobile men and women with high levels of transactional sex and non-cohabiting partners drives HIV transmission in these settings. The pattern is relevant to urban zones of economic activity, borders, and large rural plantations all over Malawi.
- 8) **Rising HIV prevalence driven by complex interactions between culture and risk behavior** – Data from the Rural South identified multiple, complex interactions of local cultural practices with HIV risk behavior, including, for example, sexual initiation rites among youth and patterns of divorce and remarriage among women. The interaction of culture and HIV risk behavior is not unique to the Rural South of Malawi, but each area requires specific in-depth understanding of the nature of these interactions.

Conclusions: Despite national improvement in indicators of HIV prevalence, risk behaviors, and prevention program reach and intensity, this triangulation exercise sounds an alarm against complacency. In the urban areas of the Center and South, HIV prevalence and risk behaviors

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remain unacceptably high. The relatively low HIV prevalence in areas of the rural North and Center may soon give way to rising prevalence. Moreover, the relative shift in the epidemic towards rural areas could translate to increases in HIV cases overall as most Malawians live in rural areas. This may be particularly worrisome in the highly populated rural South. On a positive note, data do support the success of many prevention efforts in specific areas of Malawi, such as the Urban North. These successes need to be replicated.

Recommendations: The evidence from the Malawi Triangulation Project and input of the workshop participants make the following recommendations:

- Ramp-up and closely monitor HIV prevention program reach, intensity, and quality in under-served areas. Replicate programs that have a proven record of success through personnel exchanges and regional workshops, with adequate monitoring and evaluation. Meanwhile, sustain and intensify programs that are working.
- Target prevention programs to mobile male populations with disposable income, using, for example, a peer-driven “Popular Opinion Leader” model, capitalizing on their strong social networks. Specifically target multiple partnering and lack of condom use with non-cohabitating partners. Involve working men in HIV prevention (e.g., workplace programs, peer interventions for fishermen, vendors, estate workers, and salaried and mobile workers).
- Enhance women’s economic opportunities, social support, and human rights while combining such programs with access to reproductive health and HIV prevention options. For example, target women with micro-enterprise opportunities, and integrate such programs with education on HIV prevention and peer support networks.
- Work with and target prevention activities to local custodians of culture (e.g., chiefs and people in charge of initiation ceremonies) to address the intersection of culture and risk.
- Renew and enhance government prevention programs with commercial sex workers, particularly around estates, borders, and urban economic zones.
- Provide stigma-free HIV/AIDS prevention services (e.g., comfortable community condom access points).
- Continue HIV surveillance vigilance for any changes in epidemic patterns drawing on multiple sources of data. Inclusion of direct measures of HIV incidence by recent or acute infection detection will improve interpretation of trends in the epidemic.
- Conduct incident HIV infection surveillance in key sub-populations to directly understand transmission rates.
- Improve surveillance for STI through consistent case reporting, epidemiological surveys in high-risk sub-populations, and sentinel surveillance to better track current trends in sexual risk behavior and potential HIV transmission.
- Avoid stagnation and complacency in the reach, intensity, and quality of programs.

Lastly, the workshop participants recommend local continuation of the triangulation approach to address the prioritized questions already identified by the stakeholders and task force.

1. BACKGROUND

Triangulation is the synthesis of data from multiple sources for public health decision-making

We use the term “triangulation” to broadly refer to the process of collecting, arraying together, examining, and interpreting data from multiple sources to improve our understanding of a public health problem and to guide programmatic decision-making to address such problems. Triangulation can be effective when a rigorous, specifically designed research study is not available or when action urgently needs to be taken. Rather than generating new data to answer a specific research hypothesis, triangulation seeks to make the best possible public health decisions based on the available evidence. Triangulation uses inductive reasoning in that it iteratively refines and modifies an explanation of the health problem based on empirical observations. Triangulation also follows the principles of Second Generation HIV Surveillance by focusing on trends over time and by combining data on the prevalence of HIV and STIs, risk behaviors, and program delivery. Finally, like Second Generation HIV Surveillance, triangulation emphasizes the rapid use of data.

After many years of collecting HIV surveillance data, surveying the general and specific high-risk populations, amassing data from monitoring prevention programs, and conducting research through multiple national and international institutions, there is an enormous volume of information on the HIV/AIDS epidemic in Malawi. However, a concerted effort to catalogue, array, examine and interpret these data has rarely been undertaken. The Malawi Triangulation Project was therefore initiated to better understand the HIV epidemic and to encourage evidence-based decisions on how to address key issues in the HIV epidemic in Malawi through the use of these existing data sources.

2. METHODS: The Triangulation Process in Malawi

This report summarizes the process, findings, and recommendations of the Malawi Triangulation Project conducted from April to September, 2006. The following is a brief project timeline:

Dates	Activities
18 – 19 April	<ul style="list-style-type: none">○ Stakeholders’ meeting; brainstorming questions relevant to Malawi’s HIV epidemic; narrowing 33 initial questions to 7 priority questions○ Formation of Triangulation Task Force
5 May – 30 July	<ul style="list-style-type: none">○ Triangulation Task Force meetings;○ Selection of 2 initial questions; Further refinement of questions;○ Identification and gathering of existing data sets, reports, studies○ Key informant interviews (officials, researchers, program managers)○ Preliminary analyses (Malawi)
30 July – 22 Sept.	<ul style="list-style-type: none">○ Preliminary analyses (UCSF)○ Workshop materials preparation
25 – 29 Sept	<ul style="list-style-type: none">○ Training workshop in triangulation methods○ Workshop on the analysis and interpretation of triangulation data

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25 Sept - present	<ul style="list-style-type: none">○ Report back of process, findings, recommendations to policy-markers;○ Dissemination of findings
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The process of planning, conducting, and communicating the results of a triangulation effort is outlined in 12 steps (see box below). However, this process is not as linear as this outline implies. Triangulation is iterative. For example, as new data sources are identified and analyzed, hypotheses are refined and modified. In the course of triangulation, returning to previous steps in the outline is anticipated.

The Stakeholders' Meeting: Steps 1 to 4. To begin the triangulation process, NAC convened a two-day meeting in Lilongwe, Malawi from 18 to 19 April 2006 (see Appendix A for a list of organizations represented). On the first day, the CDC-GAP and UCSF triangulation team presented the theoretical background of the triangulation methodology and provided real-life examples from San Francisco, Botswana, and Uganda. The meeting participants then brainstormed a list of questions that might be addressed by triangulation in Malawi.

A 12-Step Approach to Triangulation:

- 1) Identify key questions through stakeholder consensus
- 2) Ensure the questions are answerable and actionable
- 3) Identify data sources and gather background information
- 4) Refine the questions
- 5) Gather data
- 6) Make observations from each data set
- 7) Note trends across data sets and hypothesize on their likely explanations
- 8) Refine hypotheses
- 9) If necessary, identify additional data return to Step 5
- 10) Summarise findings and conclusions
- 11) Communicate results
- 12) Outline next steps

An initial list of 33 questions of public health importance to the HIV/AIDS epidemic in Malawi was generated. The questions were categorized into five thematic areas (see Appendix B for the complete list of 33 potential triangulation questions):

- 1) Epidemiology (6 questions)
- 2) Prevention (8 questions)
- 3) Testing (5 questions)
- 4) Treatment (9 questions)
- 5) Living with AIDS (5 questions)

The following day, participants refined the questions and then narrowed this initial list of 33 questions to 11 questions based on two criteria:

- 1) **Importance** - *how much of the epidemic does the question potentially address?* and
- 2) **Actionability** - *would the answer lead to clear program or policy action?*

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The stakeholders group next generated an extensive inventory of data sources available in Malawi that could be used to answer the potential triangulation questions. After this inventory, the 11 questions were prioritized to seven questions based on four additional criteria:

- 1) **Data availability** - *do the data exist to answer the question?*
- 2) **Appropriateness of the method** - *is the triangulation methodology the most appropriate one to answer the question, or is another method more appropriate (e.g., trial, cohort study, expert panel)?*
- 3) **Feasibility** - *can the question be answered in the five- to six-month timeframe?*
- 4) **Duplication** - *is the question already being addressed by another group?*

The 7 priority triangulation questions are listed in the box below:

Seven Priority Triangulation Questions for Malawi:

1. Has HIV prevalence (incidence) increased, decreased, or remained the same in Malawi from 2000 to 2005?
2. What is the reach and intensity of HIV prevention programs in Malawi from 2000 to 2005?
3. Are there disparities in the use of ART in Malawi?
4. What is the impact of services on the well being of orphans in Malawi?
5. What is the impact of provider-driven testing on HIV care and other clinical services in Malawi?
6. Has ART increased productivity among PLWHA in Malawi?
7. Is there a difference in the trends in HIV prevalence (incidence) between Lilongwe and Blantyre from 2000 to 2005?

The Triangulation Task Force Meetings: Completion of Steps 2 – 4. The stakeholders meeting recommended the formation of a Triangulation Task Force to prioritize these questions and to assist and monitor the progress of the Malawi Triangulation Project. The task force comprised representative volunteers from: the Malawi National AIDS Commission; Malawi Ministry of Health; Malawi National Statistics Office; Centers for Disease Control and Prevention; World Health Organization; UNAIDS; Medicine Sans Frontiers; Malawi Ministry of Gender; Lighthouse Trust; Baylor University; MACRO; and Malawi College of Medicine. The CDC and UCSF provided a public health prevention specialist (Mark Berry) to assist in acquiring and analyzing data and coordinating the task force for three months.

The Malawi Triangulation Task Force first met on May 5 to select two of the seven priority questions for this current triangulation exercise. One consideration for selection was to produce recommendations that could be used by the MOH and NAC at its annual HIV planning meeting in October, thus prioritizing questions most feasible to accomplish in a short time period. With

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this deadline in mind, the group determined that two questions could best be answered while still meeting the target completion date:

Two Triangulation Questions Selected for the Current Malawi Triangulation Project:

- 1. Has HIV prevalence (incidence) increased, decreased, or remained the same in Malawi from 2000 to 2005?**
- 2. What is the reach and intensity of HIV prevention programs in Malawi from 2000 to 2005?**

All 33 initial questions were recognized as critical to Malawi and those not selected for this current project were to be answered at a later time, either through triangulation or another method, as deemed appropriate.

Preliminary data had already suggested that HIV prevalence had declined in several areas of Malawi while remaining stable or increasing in other areas. The task force chose to use triangulation to verify the current trends in the HIV epidemic (Question #1), to describe differences in HIV prevalence and risk behaviors between different geographic areas and populations, to understand the reasons behind the prevailing trends in each area in terms of risk behaviors, and to target further prevention efforts.

Determining the reach and intensity of prevention efforts (Question #2) was considered a natural complement to the first question of HIV prevalence. If HIV prevalence and specific high-risk behaviors had declined in some areas of Malawi but not others, then analysis should show a correlation of geographic area with the types of prevention programs, their target populations, their reach and their intensity.

Field Work: Step 5, Gather Data. The task force members met four times between May and July 2006. Main activities of the task force during this period were to identify all possible data sources in Malawi, assist with data gathering (Step 5), guide preliminary analyses, and identify participants for the final triangulation training and analysis workshop.

The task force and the CDC-UCSF analyst identified over 100 independent sources of data. Data sources included published scientific papers, unpublished reports, and in some cases the line-listed data themselves. All data used either had national and international IRB approval or exemption or were available in publications or online. A list of the more important sources of data is presented in Appendix H.

Types of data collected included:

- Surveillance case reporting data (e.g., AIDS cases, STI cases, TB cases)
- Sentinel surveillance (e.g., HIV and syphilis prevalence among women at ANC clinics)
- Population-based surveys (e.g., the Demographic and Health Survey (DHS) in 2000, and 2004)

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- Surveys in high risk populations (e.g., behavioral surveillance)
- Prevention program delivery reports (e.g., number of HIV tests done, condoms distributed, educational materials distributed, peer educators trained)
- Data from scientific research projects (e.g., cohort studies, surveys, qualitative studies)
- Data from the national census and National Statistics Office
- Data from other health programs (e.g., sites delivering ART, patients on ART, blood transfusion services, voluntary counseling and testing, clinical records)

Under the direction of the Triangulation Task Force, the analyst conducted preliminary analyses of key data sets in the field. These preliminary analyses help to assess the quality and interpretability of the diverse sources of data and to guide the search for further information. Additional data assessments and preliminary analyses were conducted at UCSF by IGH faculty in consultation with CDC and the task force through regular conference calls. However, the bulk of the interpretation of the data was reserved for the Triangulation Workshop in Lilongwe from 25 to 29 September.

The Malawi Triangulation Workshop, Steps 6 – 12. The Malawi Triangulation Workshop was convened in Lilongwe from 25 to 29 September to complete steps 6 to 10 of the triangulation process and to begin steps 11 and 12. Participants represented 27 institutions (see Appendix C). Participants were invited both to provide insight on the data sources and to learn the methods of triangulation for future efforts in Malawi.

The data included in the workshop are presented in Appendices D-H. Of note, during the course of the workshop additional data were included for further interpretation and hypothesis generation. The appendices show tables that were used as a starting point:

- **Appendix D** includes national-level data, principally drawing from ANC sentinel surveillance, DHS surveys, and program delivery of condoms and HIV tests. A supplemental table includes more data from prevention and care programs.
- **Appendix E** provides the site-by-site ANC data for HIV prevalence and prevalent syphilis among women.
- **Appendix F** stratifies indicator data by six regions (Urban North, Rural North, Urban Center, Rural Center, Urban South, Rural South)
- **Appendix G** provides a district-by-district intersection of indicator data and specific quantitative and qualitative research studies.
- **Appendix H** presents indicator data for Question #2, reach and intensity of prevention efforts
- **Appendix I** is a partial list of key research studies conducted in Malawi; additional studies were identified and used during the workshop.

The workshop was organized around brief didactic lectures by the UCSF and CDC facilitators followed by break out sessions of smaller groups. Groups were generally organized to focus on one of the three regions (North, Center, South). The tasks of the groups were divided into six exercises or practica, each focusing on one step of the triangulation methodology (e.g., making observations from individual data sets, noting trends across data sets) and/or one level of indicator data (e.g., national level, regional level, district level). After each practicum, groups made presentations of findings followed by facilitated discussions with the whole workshop.

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The practica were as follows:

- **Practicum A:** National HIV indicators, HIV and syphilis prevalence, risk behavior, and prevention program intensity, 1996 – 2005; and qualitative and quantitative research studies conducted in Malawi in recent years. The purpose of this practicum was to assess the strengths and limitations of potential data to be used for triangulation in Malawi, to identify data gaps and make recommendations for new data collection, and to become familiar with the data available for triangulation in Malawi.
- **Practicum B:** ANC sentinel surveillance data. The purpose of this practicum was to examine a single data set by person, place, and time; to interpret temporal trends in indicators by person and place; and to compare relative levels of infection by person, place, and time.
- **Practicum C:** HIV prevalence at ANC sites and DHS, risk behaviors, prevention program intensity, and HIV knowledge by six regional strata (Urban North, Rural North, Urban Center, Rural Center, Urban South, Rural South). The purpose of this practicum was to identify concurrent trends in HIV prevalence, risk behavior, and HIV prevention intensity within six regions of Malawi; to identify relative differences in HIV prevalence, risk behavior, and prevention intensity between six regions of Malawi; and to generate hypotheses that may explain the temporal trends and differences in the HIV epidemic among the regions.
- **Practicum D:** The above HIV indicators were taken down to the district level with inclusion of specific qualitative and quantitative data from research studies in Malawi. The purpose of this practicum was to refine hypotheses to explain the HIV epidemic trends with respect to local districts and regions. The process of refining hypotheses entails determining if the diverse data sources corroborate, refute, or cause you to modify your determination of the direction of the epidemic and reasons for this determination. This practicum also was used to identify “hotspots” in greatest need of targeted HIV prevention interventions, their locations at the district or regional level, and the types of interventions needed. Similarly, there may also be local or regional prevention “success stories” where indicators are going in the right direction. Finally, this exercise was used to identify information or data gaps by location and by types of measures.
- **Practicum E:** This practicum unified the data on prevention reach and intensity from the previous practicums in order to provide more insight into Question #2.
- **Practicum F:** Communication of findings. This practicum was conducted with three volunteers from the participants to compile the major findings, interpretations, and recommendations from the total workshop. These findings were presented to a meeting of policy makers and stakeholders on Friday, 29 September.

Through these practicum exercises, Steps 6 through 12 were undertaken. Findings of the small groups are synthesized and presented in the Results section below.

Of note, early in the triangulation process it became clear that the backbone of data to answer Question #1 would come from **ANC sentinel surveillance** and the **DHS surveys (2004 including HIV prevalence)**. This was by virtue of their national coverage and consistency of methods over the several years. The ANC data complemented the DHS by providing trends in HIV prevalence itself in selected locations, including 19 sites in urban, semi-urban, and rural areas. Together, the ANC sentinel surveillance data and the DHS data served as the primary signals for trends in the HIV epidemic. The DHS was particularly useful in determining trends in

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risk behavior and the reach of prevention efforts because of its large sample size and representative sampling design. The 2004 DHS survey also included HIV prevalence (also known as “DHS+” when including HIV prevalence). When the DHS sample size was greater than 200 men or women in a district, the data were examined for that particular district, however district level data of the DHS were not interpreted in isolation. When possible, a minimum of three independent data sources were used to corroborate any district-level findings.

The DHS data also served as a starting point to generate hypotheses on why the HIV prevalence trends prevailed. These hypotheses were then further refined (confirmed, modified, or refuted) by additional sources of data. These additional data sets were often present in only a few select sites or populations. Qualitative data were used to add depth and understanding once the refined hypotheses had sufficient supporting evidence from at least three data sources.

The interpretation of several sources of data were deemed less interpretable than others due to uncertain representation and strong selection biases (e.g., HIV prevalence among blood donors or VCT clients), uncertain denominators (e.g., TB cases detected), inconsistent collection (e.g., AIDS case reporting, prevention activity reporting, or small sample size (e.g., behavioral surveillance).

3. RESULTS

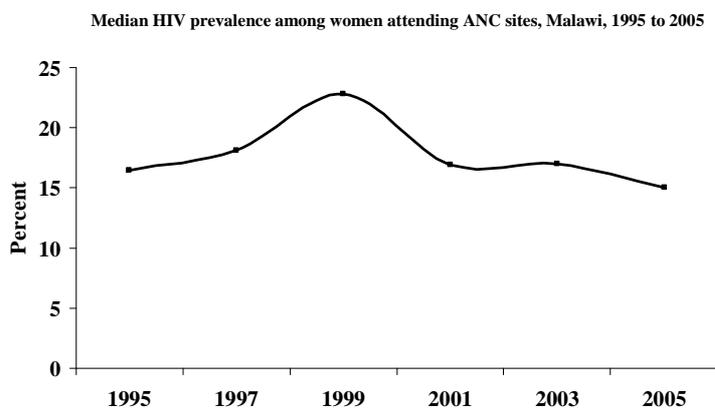
Statistical analysis of trends in HIV prevalence at ANC sites from 1999 to 2005. A central indicator of HIV trends in the epidemic is the prevalence of HIV detected at the antenatal clinic (ANC) sentinel surveillance sites. These trends are referred to throughout this report. The table below summarizes the regression analyses of median HIV prevalence at ANC sites for Malawi, the three regions, and urban vs. rural location for all ages and women aged. While the statistical analyses assist with interpretation of the epidemic trends, we recommend consideration of the behavioral, programmatic and qualitative data also presented in this report.

Population	Direction of trend	p-value for regression
National, all ages	Downward, borderline significant	0.079
National, 15 to 24 years	No temporal trend	0.245
North, all ages	No temporal trend	0.594
North, 15 to 24 years	Downward, significant	0.047
Center, all ages	No temporal trend	0.261
Center, 15 to 24 years	No temporal trend	0.173
South, all ages	No temporal trend	0.183
South, 15 to 24 years	No temporal trend	0.369
Rural, all ages	No temporal trend	0.198
Rural, 15 to 24 years	No temporal trend	0.149
Semi-urban, all ages	Downward, significant	0.004
Semi-urban, 15 to 24 years	Downward, significant	0.001
Urban, all ages	No temporal trend	0.578
Urban, 15 to 24 years	No temporal trend	0.590

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In the table above, statistically significant and borderline significant trends are highlighted. Of note, median HIV prevalence among women of all ages has shown a borderline significant decrease (also shown in the figure below). Median HIV prevalence has significantly decreased in the North region among young women and in semi-urban sites for all women.

Note that HIV prevalence is a product of the number of deaths in HIV positive persons balanced with new HIV infections resulting in the time specific rate of HIV positives in the population. Therefore, a declining prevalence trend for all ages suggests that more recently deaths have been outweighing new infections. This is good when it is suspected that a decline is due to reduced infection. HIV prevalence trends among the 15 to 24 year olds are less influenced by deaths and more influenced by real changes in HIV transmission. ART can also increase HIV prevalence by prolonging survival. ART scale up began in Malawi in 2004 with 25,000 patients alive and on treatment by September 2005, the period that 2005 ANC surveillance was conducted. There were an estimated 790,000 adults infected with HIV in 2005, therefore it is not likely that ART plays a significant role in prevalence in 2005. Moreover, HIV prevalence among pregnant women may be less influenced by long-term use of ART. While the effects of ART do not need to be considered in this trend as of yet, future interpretation of prevalence trends will become more complex.



In support of an overall decline in median HIV prevalence are improving trends in multiple independent sources of data on risk behaviors and prevention program intensity in the national level (see Appendix D for figures):

Improvements in HIV indicator data trends in Malawi, 2000 - 2005:

- HIV prevalence among young women (15 to 24 years) at ANC sites
- Increases in teen abstinence among men and women
- Decrease in non-cohabitating partners among men
- Increase in condom use with non-cohabitating partners among men
- Decrease in multiple partners among men
- Decrease in sex worker partners among men
- Increase in condom use with sex workers among men
- Increase in knowing where to get a condom among men and women
- Increase in ever testing for HIV among men and women
- Decrease in reported genital ulcer among men and women
- Increase in condoms distributed per man, and per high risk man
- Increase in HIV test delivered per capita

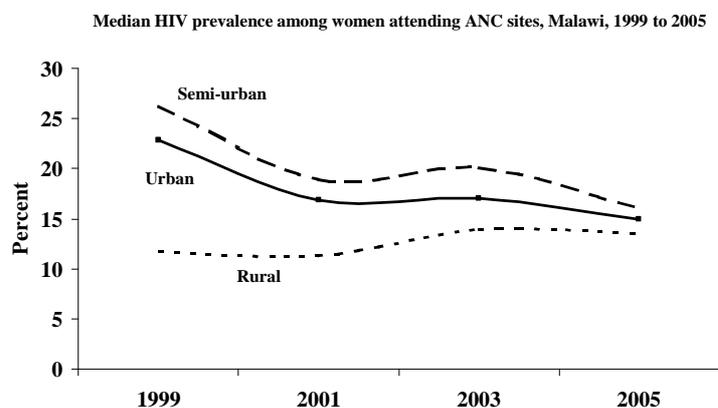
In addition, most measures of program activities have increased in recent years, including booklets distributed, youth trained in life-skills HIV education, persons trained for HIV/AIDS interventions, and employees and their spouses reached by workplace programs. Also, improvements were seen in three of five measures of basic HIV/AIDS knowledge.

However, a few factors mitigate this national success. First, the most recent years of HIV prevalence show a somewhat slowed decline. Second, the improvements in risk behavior indicators are not dramatic and changed little in recent years. Third, some indicators of prevention intensity are flagging and some indicators of HIV/AIDS knowledge are reversing. Finally, improvements in the HIV epidemic are not equally shared by all populations in Malawi. In particular, there appears to be a shift in the epidemic from urban to rural populations.

Semi-urban ANC HIV prevalence is declining but urban and rural prevalence is not declining. The overall national trends mask a major difference in urban versus rural areas. As illustrated by the table and figures below, the median HIV prevalence in ANC sites classified as semi-urban is declining while there is no decline in urban and rural sites. In particular, four of the eight rural ANC sites actually have rising HIV prevalence since 1999.

Of note, the terms “rural,” “urban” and “semi-urban” refer to the location of the sentinel site, not the residence of the women attending the sites. Nonetheless, the DHS+ survey of 2004 found a close correspondence between the population-based HIV prevalence among women residing in the area served by the ANC site and the prevalence of HIV at the ANC site in 2005 (ORC MACRO, unpublished data, Feb. 2006).

Any shift in HIV prevalence towards the rural areas is a great concern because the vast majority of the Malawian population resides in rural areas. Thus, a relative shift in the epidemic from urban to rural may translate to a higher number of HIV infections even if the overall prevalence stabilizes.

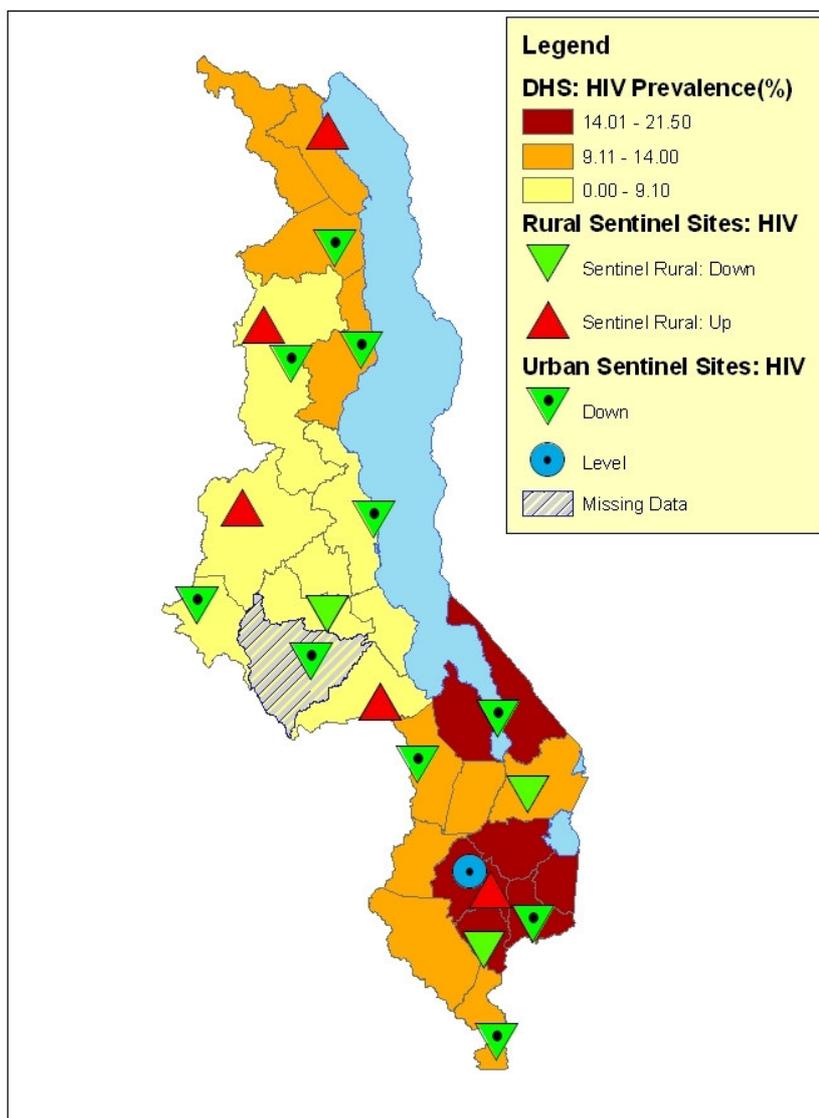


Regional Findings: Epidemic trends vary by region and locality (Urban North, Rural North, Urban Center, Rural Center, Urban South, Rural South). Further stratification of the national indicator data revealed regional differences. Data were stratified into six parts by geography and residences, namely Urban North, Rural North, Urban Center, Rural Center, Urban South and Rural South.

In brief, differences in the HIV epidemic in the six regions are summarized below. Full indicator data are presented in the six tables of Appendix F.

- 1) **Urban North** – The epidemic is characterized by declining HIV prevalence, improvement in risk behaviors, and good prevention program quality and coverage.
- 2) **Rural North** - HIV prevalence is relatively low; however, there has been no decrease to a slight increase in recent years. This worrisome trend is corroborated by high and/or increasing risk behaviors in men and low access to prevention in women.
- 3) **Urban Center** - HIV prevalence has decreased; however, the decline may be slowing. Indicators of risk behaviors and prevention reach are mixed.
- 4) **Rural Center** - HIV prevalence is relatively low, but may be level to increasing in recent years. Most risk behaviors are relatively low and/or improving.
- 5) **Urban South** - HIV prevalence is decreasing but remains the highest in the country. Some risk behaviors are improving.
- 6) **Rural South** - HIV prevalence is relatively high for a rural area and is level to increasing. Risk behavior indicators are improving, but some remain very high.

HIV PREVALENCE, MALAWI DHS 2004, Sentinel Sites 1999-2005



The map above shows the underlying population-based HIV prevalence (from DHS+ in 2004) and the site-specific trends in HIV prevalence at ANC sites.

Case Study Findings: Local Epidemic Patterns. Data were further broken down to the district level when possible (e.g. for the “over-sampled” districts of the DHS surveys, and the site specific ANC sentinel surveillance data). The district level analysis allowed for inclusion of data from quantitative and qualitative research projects which were carried out in specific locations. Appendix G provides the initial data used, additional data (particularly qualitative) were identified during the workshop itself. Appendix H lists some of the key studies included in the workshop.

Eight distinct epidemic patterns were characterized within the six strata characterized by region (North, Center, South) and residence (Urban, Rural).

Pattern #1: A case study of data intersecting within the Urban North

Prevention success in areas of high educational status - A low overall HIV prevalence with a decline in recent years (22.2% in 1999 to 13.5% in 2005, ANC) is likely driven by a relatively high intensity of prevention programs, high socio-economic and educational status, and good infrastructure.

Key indicators - Generally, risk behavior indicators are improving, including teen abstinence (66.7% in 2000 to 80.9% in 2004, DHS 15-19 year-old males; 48.5% in 2000 to 65.4% in 2004, DHS 15-19 year-old females), having multiple non-cohabitating sexual partners in the last 12 months (2.6% in 2000 to 0% in 2004, DHS males), condom use with non-cohabitating partners at last sex (50.0% in 2000 to 66.7% in 2004, DHS males), and unprotected sex with commercial sex workers in the last year (2.0% in 2000 to 0% in 2004, DHS males). Testing rates are high and rising among men (35.8% in 2000 tested to 39.4% in 2004) and women (13.1% tested in 2000 to 27.9% in 2004). The quality and intensity of prevention and care programs is high. For example, the Taiwan Medical Mission, which provides medical care, is based in Mzuzu.

Geographic extent - The pattern was found characterized principally by data from Mzuzu, but elements of this pattern were detected in Nkhata Bay and Rumphi. The pattern may extend to other areas of Malawi with good infrastructure and high educational attainment.

Pattern #2: A case study of data intersecting within the Rural North

Rising HIV prevalence in mobile male populations - Data from areas along the Tanzanian border and northern lake area of the Rural North indicate rising HIV prevalence driven by risk behaviors of mobile male populations with disposable income, including vendors, fishermen, businessmen, policemen, and border traders.

Key indicators – HIV prevalence is relatively low, but somewhat increasing in rural ANC sites of the North (from 9.5% to 14.4% in Mbalachanda and from 6.6% to 12.7% in Kaporo, in 1999 and 2004, respectively). This worrisome trend was corroborated by relatively high and/or worsening trends in men having non-cohabitating partners (14.3% in 2000 to 15.6% in 2004, DHS) and sex worker partners (3.8% in 2000 and 4.0% in 2004, DHS), and lack of condom use with non-cohabitating partners (32.1% in 2000 to 29.1% in 2004, DHS). HIV knowledge levels were also relatively low as was testing among women (7.2% ever tested in 2000 to 3.4% in 2004, DHS). This case is also corroborated by qualitative literature, including an article by Crampin that found that immigration into Karonga and travel are important risk factors for HIV and that HIV risks are higher among non-farmers.

Geographic extent - HIV risk behavior around borders may be an issue around many borders and border crossings of Malawi; other data from areas of the South and Center corroborated this pattern.

Pattern #3: A case study of data intersecting within the Rural North

Rising HIV prevalence in the context of gender imbalances - Data from areas of the Rural North highlight negative impacts of high polygamy, inter-spousal age gaps, poor female support systems, and low negotiation skills on women's HIV knowledge and risk behavior.

Key indicators – Low rates of HIV testing among women and low levels of basic HIV/AIDS knowledge were emblematic of this pattern. In the 2004 DHS, 11.7% of men and 14.6% of females did not know where to get a condom; only 24.5% of women knew about mother-to-child transmission; and 13.1% of men and 24.4% of women thought a healthy-looking person cannot be infected with HIV. The qualitative literature also supports this paradigm, including articles by Helleringer, Watkins, Munthail, Schatz and Reniers, which describe some of the specific drivers of gender imbalances, particularly among rural Malawians.

Geographic extent - The pattern is likely to apply to other segments of Malawian female society with low economic options, low social support within and outside the family, and poor access to HIV prevention and reproductive health programs.

Pattern #4: A case study of data intersecting within the Urban Center

Slowing declines in HIV prevalence - Data from areas of the Urban Center suggest that declining HIV prevalence has slowed in recent years.

Key indicators –HIV is decreasing, but remain relatively high and showing a leveling trend or a “stagnating” decline (as show above, there is no significant decline in urban HIV prevalence at ANC sites). Some risk behaviors are relatively low and/or improving, such as condom use with sex workers (4.7% had unprotected sex with a CSW in 2000, to 2.7% in 2004, DHS), abstinence among teen men (39.1% never had sex in 2000 to 57.7% in 2004, DHS) and women (43.0% never had sex in 2000, to 64.6% in 2004, DHS), and HIV test delivery (21 persons per test performed in 2002 to 10 persons per test performed in 2005). Other indicators, however, are poor, stagnating, or worsening, such as having a non-cohabitating partner among men (12.6% in 2000 to 11.7% in 2004, DHS), condom use with non-cohabitating partner among men (63.0% in 2000 to 47.1% in 2004, DHS), having multiple sexual partners among men (6.5% in 2000, 6.2% in 2004, DHS), genital ulcers (4.8% among men and 5.6% among women, 2004 DHS), testing uptake (76.6% of men and 96.6% of women never tested in 2004 DHS), and condom access and distribution (15.9% of men and 24.1% of women did not know where to get a condom in 2004 DHS).

Geographic extent - The majority of the data originated from Lilongwe; however, the slowing of gains in prevention may apply to other urban areas of Malawi and, to some extent, to the country as a whole.

Pattern #5: A case study of data intersecting within the Rural Center

Prevention success in areas with good quality prevention programs - Data from the areas in the northern part of the Rural Center show relatively low HIV prevalence and good quality prevention programs with adequate monitoring and evaluation.

Key indicators – HIV prevalence is, for the moment, the lowest in the country (6.1% among men and 8.4% among females in 2004 DHS). Many indicators of risk behavior are low and/or improving. For example, only 13.9% of males in 2000 and 10% of males in 2004 had a non-cohabitating partner, and unprotected sex with last non-cohabitating partner among men decreased from 10.5% in 2000 to 6.7% in 2004 DHS. Educational media coverage is high. Prevention programs appear to have high reach, intensity, and quality as noted with good monitoring and evaluation (27 persons per HIV test performed in 2005, down from 126 in 2002). A caveat is that HIV prevalence may be rising from its currently low level (median HIV prevalence at rural Center ANC sites increased from 4.5% in 1999 to 6.4% in 2005).

Geographic extent – Available data are centered on Kasungu district and parts of Dowa, Ntchisi and Mchinji, but the pattern may pertain to other areas where good quality, intensity, and reach of prevention programs have been sustained.

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Pattern #6: A case study of data intersecting within the Rural Center

Rising HIV prevalence in areas with weak prevention efforts - Data from the southern part of the Rural Center paint a worrisome picture of rising HIV prevalence resulting from scant and poor prevention programs with high levels of risk behavior and low basic HIV knowledge.

Key indicators –HIV prevalence may be rising in a context of low reach, intensity, and quality of prevention programs. For example, only 11.7% of men had seen a TV ad on AIDS and 26.6% had read an article about AIDS in the 2004 DHS, and 63.2% of women had heard a radio spot on AIDS in the 2004 DHS. The HIV/AIDS knowledge indicators are the worst in the nation (6.2% of men and 11.4% of women did not know where to get a condom, 2004 DHS), and many risk behaviors are high and/or rising (5.8% of men had sex with a CSW in 2004, up from 5.1% in 2000 DHS). HIV prevalence in some areas is rising and already relatively high compared to other rural areas in the Center. A new highway under construction connecting the two largest cities in Malawi and running along the Mozambican border may facilitate the spread of HIV and risk behavior if preventative action is not taken.

Geographic extent - Data centered on Dedza district, but a similar pattern is likely to pertain to many rural areas of Malawi where prevention efforts have been absent and/or poorly monitored.

Pattern #7: A case study of data intersecting within the Urban South

Persistently high HIV prevalence in economic “hotspots” - Data from the Urban South describe persistently high HIV prevalence with little or no decline in areas of high economic activity such as rural estates, borders, and urban manufacturing and marketing zones.

Key indicators – HIV prevalence has not significantly changed in the Urban South and it remains the highest in the nation. A slight apparent decline may be slowing (27.9% in 1999, 27.0% in 2005 ANC). Certain economic “hotspots” manifest high **levels of** risk behavior, particular related to transactional or commercial sex work (6.2% in the 2004 DHS), and multiple partnering (3.1% in 2004 DHS). The structural environment contributes to the epidemic pattern in the South: it is the most densely populated, home to the commercial center and largest city, and has large tea estates and very active border crossings. Large numbers of mobile men and women with high levels of transactional sex and non-cohabitating partners drives HIV transmission in these settings. This trend was corroborated by the qualitative literature, specifically articles by Chirwa and Kaler which describe the association between migrant workers and increased risk for HIV/AIDS and an article by Van de Borne regarding transactional sex in trading centers.

Geographic extent - The pattern is relevant to urban zones of economic activity, borders, and large rural plantations all over Malawi.

Pattern #8: A case study of data intersecting within the Rural South

Rising HIV prevalence driven by complex interactions between culture and risk behavior - Data from the Rural South identified multiple, complex interactions of local cultural practices with HIV risk behavior, including, for example, sexual initiation rites among youth and patterns of divorce and remarriage among women.

Key indicators – HIV prevalence is relatively and increasing (21.7% in 1999, 15.8% in 2001, 17.0% in 2003 and 18.6% in 2005, ANC). Low teen abstinence (64.7% of men and 65.8% of women 15-19 have had sex, 2004 DHS) may be linked to initiation rites in some areas (Munthail, 2004 Adolescent Survey). A pattern of divorce and remarriage may be perceived as a prevention strategy by women, but may also contribute to the spread of HIV if assumptions are wrong (MDICP/Watkins et. al.), **partner (or spousal?)** turn-over is high, and condom use low.

Geographic extent - The interaction of culture and HIV risk behavior is not unique to the Rural South of Malawi, but each area requires specific in-depth understanding of the nature of these interactions.

Additional findings on the reach and intensity of prevention programs. The fourth day of the workshop focused on prevention program reach and intensity to address Question 2. Significant overlap in the findings of Question 1 and Question 2 were noted and programmatic data were used to support existing hypotheses and strengthen recommendations. In general, the reach and intensity of prevention programs, especially counseling and testing, are improving in Malawi most dramatically in the last few years. For example, the number of condoms distributed per man and per high risk man appears to grow exponentially. HIV testing and women receiving PMTCT have also increased.

However, certain findings highlight disparities and uncertainties in the impact of this increasing prevention reach and intensity:

- The distribution of prevention efforts is not always matched by their uptake. For example, according to DHS, knowledge of where to get a condom for both men and women has remained level or decreased in many areas. While testing rates are improving everywhere, particularly in rural sites, most Malawians still have not tested for HIV.
- Other indicators of prevention program impact, such as the distribution of HIV/AIDS educational materials and training of peer educators, lack data of high enough quality to interpret a clear trend. Condom distribution data are also not consistently available by region.
- Trends in knowledge and attitudes are mixed. For example, knowledge or endorsement of abstinence as a means to prevent HIV has gone up in every region among men and women; however, trends in knowledge and endorsement of condom use or faithfulness to one partner are mixed.
- The above point was echoed by another interpretation of the triangulation workshop: that prevention messages may have over-emphasized abstinence as prevention, at the expense of under-promoting condom use and being faithful (or partner reduction). In other words, Abc should be come ABC.
- Other trends in knowledge and attitudes are of uncertain interpretation. For example, knowing someone who died of AIDS (often considered an indicator of taking person action to prevent infection) is declining in many areas.
- Finally, the reach and intensity of prevention effort is not uniformly distributed. For example, data indicate lower levels of testing in the Center region, and - though the gap is narrowing - in rural areas. Though PMTCT is increasing overall, the majority of those receiving PMTCT are in the Central region (See Figure 21).

Caveats and limitations. We recognize several limitations in the methods, data, and interpretations of this triangulation project. While our project has sought to identify the most plausible interpretations of the data viewed as a whole, we recognize alternative interpretations are possible and uncertainties remain. The following are key points to bear in mind when interpreting the data presented in this report.

- **Ascribing causality.** Caution must be exercised in attributing the trends in HIV indicators observed to specific causes. The data do not prove that any particular prevention program or types of programs caused the trends outlined in this report – either at the national, regional, or local levels – upward or downward. When assessing causal linkages, consideration should be given to the temporal sequence (e.g., what happened first?), the strength of the associations (e.g., how big a decrease in risk behavior has occurred?), consistency across independent data sets (are data of HIV infection, behavior,

and programs consistent?). Nonetheless, we do believe the interpretations we have given are the most plausible explanations when considering the data in aggregate.

- **Changes in HIV prevalence vs. HIV incidence.** Several indicators presented in this report are HIV prevalence, not HIV incidence. Overall, changes in prevalence should lag behind changes in risk behaviors. Changes in HIV prevalence may reflect changes in risk behaviors occurring many years in the past. Similarly, changes in risk behavior detected now may not manifest as changes in HIV prevalence until many years in the future. Therefore, the temporal coincidence of behavioral indicators and HIV prevalence as presented in this must be interpreted cautiously. Of note, HIV prevalence among young age groups, particularly women age 15 to 24 may reflect more current trends in HIV transmission or incidence. More emphasis may therefore be given to the HIV prevalence trends in this younger age group. Ideally, direct measures of HIV incidence are needed. Newer technologies in detecting recent and acute HIV infection will help interpretation in the future.
- **Representativeness of data.** Potential selection biases are limitations to interpreting much of the data included in this report. Who is included in the various data sets varies greatly by source. The gold standard for representativeness is true population-based or probability-based studies such as the DHS surveys. At the other end of the spectrum, programmatic data is very influenced by access to programs and self-selection of those attending programs. The ANC data, as unlinked anonymous studies using consecutive sampling, occupy a middle ground in terms of representativeness.
- **Statistical inference.** Statistical tests are the traditional yardsticks for inference on differences and trends. Because triangulation mixed quantitative, qualitative, and programmatic data, statistical tests are not always appropriate or possible. We have attempted to include statistical tests where they were appropriate and/or previously available. However, other statistical tests may be deemed necessary.

4. CONCLUSIONS AND RECOMMENDATIONS

Despite national improvement in indicators of HIV prevalence, risk behaviors, and prevention program reach and intensity, this triangulation exercise sounds an alarm against complacency. In the urban areas of the Center and South, HIV prevalence and risk behaviors remain unacceptably high and recent gains may be slowing. The relatively low HIV prevalence in areas of the rural North and Center may soon give way to rising prevalence. Moreover, the relative shift in the epidemic from urban to rural areas could translate to increases in HIV cases overall as most Malawians live in rural areas. This may be particularly worrisome in the highly populated rural South. On a positive note, data do support the success of many prevention efforts in specific areas of Malawi, such as the Urban North. These successes need to be replicated.

The evidence from the Malawi Triangulation Project and input of the workshop participants make the following recommendations:

Recommendations: The evidence from the Malawi Triangulation Project and input of the workshop participants make the following recommendations:

- Ramp-up and closely monitor HIV prevention program reach, intensity, and quality in under-served areas. Replicate programs that have a proven record of success through personnel

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exchanges and regional workshops, with adequate monitoring and evaluation. Meanwhile, sustain and intensify programs that are working.

- Target prevention programs to mobile male populations with disposable income, using, for example, a peer-driven “Popular Opinion Leader” model, capitalizing on their strong social networks. Specifically target multiple partnering and lack of condom use with non-cohabitating partners. Involve working men in HIV prevention (e.g., workplace programs, peer interventions for fishermen, vendors, estate workers, and salaried and mobile workers).
- Enhance women’s economic opportunities, social support, and human rights while combining such programs with access to reproductive health and HIV prevention options. For example, target women with micro-enterprise opportunities, and integrate such programs with education on HIV prevention and peer support networks.
- Work with and target prevention activities to local custodians of culture (e.g., chiefs and people in charge of initiation ceremonies) to address the intersection of culture and risk.
- Renew and enhance government prevention programs with commercial sex workers, particularly around estates, borders, and urban economic zones.
- Provide stigma-free HIV/AIDS prevention services (e.g., comfortable community condom access points).
- Continue HIV surveillance vigilance for any changes in epidemic patterns drawing on multiple sources of data. Inclusion of direct measures of HIV incidence by recent or acute infection detection will improve interpretation of trends in the epidemic.
- Conduct incident HIV infection surveillance in key sub-populations to directly understand transmission rates.
- Improve surveillance for STI through consistent case reporting, epidemiological surveys in high-risk sub-populations, and sentinel surveillance to better track current trends in sexual risk behavior and potential HIV transmission.
- Avoid stagnation and complacency in the reach, intensity, and quality of programs.

Lastly, the workshop participants recommend local continuation of the triangulation approach to address the remaining prioritized questions already identified by the stakeholders and task force.

The methods use to address these first two questions are likely to be applicable to most of the remaining questions identified by the stakeholders. In addition, this exercise has catalogued a vast amount of recent data that may be applied to other issues concerning the HIV epidemic in Malawi.

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5. LIST OF APPENDICES

- A. List of participants at the Malawi Triangulation Project stakeholders meeting
- B. Brainstorm of 33 questions for the Malawi Triangulation Project
- C. List of participants at the Malawi Triangulation Workshop
- D. National level indicator data
- E. Site specific ANC sentinel surveillance data.
- F. Regional level indicator data
- G. District level indicator data
- H. Question #2 data
- I. Key research studies in Malawi

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Appendix A. Organizations represented at the Malawi Triangulation Project stakeholders meeting, 18 to 19 April 2006, Lilongwe, Malawi.

NAC*	CDC-PHPS*	NSO*	WHO*
College of Medicine	CHSU, MOH*	MSF*	NYCOM
UNC Project	Baylor*	UCSF	MACRO*
CDC-GAP*	UNAIDS*	MASAF	MANASO
PSI-Malawi	Ministry of Gender*	NAPHAM	UPENN
Johns Hopkins Project	Save the Children	MSF-Belgium	UNICEF
Taiwan Medical Mission	HIV/AIDS, MOH*	HMIU, MOH	World Bank
Malawi College of Med*	National Youth Commission	Lighthouse*	DFID
REACH Trust Malawi	Karonga Prevention Study	CDC-Atlanta	MSH

*Also represented on the Triangulation Task Force

Appendix B. Brainstorm of 33 questions for the Malawi Triangulation Project

Epidemiology

1. What is the overall trend in HIV prevalence nationally? Why?
2. Is there a difference in epidemic trends regionally? If so, why?
3. Is there a difference in epidemic trends between Blantyre and Lilongwe? If so, why?
4. What is the trend in STI prevalence and why?
5. Is there an association between HIV prevalence and national disasters (hunger, drought, flood, etc.)?
6. What is the association between circumcision and HIV prevalence in Malawi?

Prevention

7. What is the reach, intensity and impact of HIV prevention in youth?
8. What is the reach, intensity and impact of HIV prevention in high-risk groups?
9. Are prevention resources allocated appropriate to the epidemic?
10. What have been the changes behavior or why isn't behavior changing?
11. Are behavior change communication materials effective?
12. Are CBOs effective?
13. Are HIV policies enforced?
14. What is the relationship between alcohol and risk behavior?

Testing

15. What the impact of opt out testing (provider-driven vs. client-driven, effect on ANC, PMTCT, TB, STD/other clinical services)? How do we move toward provider-driven HIV testing?
16. Has VCT resulted in behavior change?
17. Are there SES disparities in access to testing?
18. Are HIV+ parents having their children tested?
19. Is there sero-sorting in Malawi (e.g. pre marriage testing)?

Treatment

20. What is the impact of ART on mortality?
21. What is the impact of prophylaxis on mortality?
22. What is the impact of ART on HIV transmission?
23. Are there disparities in reach/access to ART?
24. What is the relationship between ART and early death (Why? Who? How? – relation to TB)?
25. What is the impact of PMTCT on infant/child mortality (including children of HIV+ mothers, nutrition, ped. ART, other causes of death)?
26. What is the relationship between traditional birth attendants and PMTCT?
27. How do side effects of ARVs affect adherence?
28. What is the reach, interpretation, and impact of CD4 counts and clinical staging in pregnant women?

Living with HIV/AIDS

29. Has ART increased productivity? Employment? Human resource capacity?
30. What are family planning choices among PLWHA?
31. What is the biological impact of HIV/AIDS on fertility?
32. What is the impact of ART on fertility among PLWHA?
33. What is the current status of prevention for positives?

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Appendix C. Organizations represented at the Malawi Triangulation Workshop, 25 to 29 September 2006, Lilongwe, Malawi.

NAC	CDC-PHPS	NSO	WHO
College of Medicine	CHSU, MOH	CERT	FHI
UNC Project	Baylor College	UCSF	MACRO
CDC-GAP	UNAIDS	MASAF	MANASO
Bridge Project	Taiwan Medical Mission	HIV/AIDS, MOH	HMIU, MOH
Malawi College of Med	Lighthouse	REACH Trust	UNC Project
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Appendix D.1. Malawi National HIV indicators, HIV and syphilis prevalence, risk behavior, prevention program intensity, 1996 – 2005.

Indicator	1999	2000	2001	2002	2003	2004	2005
HIV and syphilis prevalence (%)							
Median HIV prevalence, ANC, all ages	22.8		16.9		17.0		15.0
Median HIV prevalence, ANC, 15-24 year olds	20.7		15.0		17.5		14.1
Median syphilis prevalence, ANC, all ages	2.6		3.7		2.2		1.0
Median syphilis prevalence, ANC, 15-24 year olds	4.4		3.4		2.1		1.8
HIV prevalence DHS 2004, male						10.2	
HIV prevalence DHS 2004, female						13.3	
Risk behavior (DHS) (%)							
Ever had sex, 15 to 19 year olds, male		59.9				52.3	
Ever had sex, 15 to 19 year olds, female		56.9				50.9	
Had non-cohabitating partner (NCP), male		14.3				9.2	
Unprotected last sex with NCP, all males		9.6				6.1	
Condom use last sex with NCP, males with NCP		32.9				32.9	
Multiple NCP, male		4.9				2.7	
Multiple NCP, urban male		7.8				2.5	
Multiple NCP, rural male		4.3				3.1	
Multiple NCP, urban male, 15 – 24 years old		11.9				4.1	
Multiple NCP, rural male, 15 – 24 years old		8.6				6.0	
Paid for sex in last year, male		9.1				7.4	
Unprotected paid for sex in last year, male		5.4				4.0	
Not knowing where to get a condom, male		13.0				12.8	
Not knowing where to get a condom, female		23.1				21.2	
Never tested, men		84.8				83.7	
Never tested, women		91.5				84.7	
Genital ulcer history, men		4.0				3.0	
Genital ulcer history, women		7.2				5.3	
Prevention program intensity							
Condoms distributed per each man		1.9	3.0	5.1	6.0	6.3	6.4
HIV tests done per 100 persons				1.7	2.4	3.1	6.6

Appendix D.2. Additional potential national indicators, Malawi, 2000 – 2005.

Indicator	2000	2001	2002	2003	2004	2005
HIV prevalence among blood donors			14.6	15.2	13.0	10.7
HIV prevalence among persons testing at VCT sites			27.8	29.3	28.4	23.3
HIV prevalence among persons testing at MACRO		15.0	14.8	14.0	14.3	13.3
Reasons for testing (MACRO):						
Current risk behavior, males		46.6	57.1	62.3	51.8	36.9
Past risk behavior, males		2.9	3.0	2.8	14.8	26.4
Partner's behavior, females		0	0.7	0.6	4.4	8.9
Partner ill/died, females		8.5	7.3	6.3	3.7	0.8
Reported AIDS cases		14,074	23,349	2,008	16,060	11,025
Reported STI cases			193,295	276,666	207,136	
Reported TB cases			26,532	26,836	26,136	26,019
Number of ART service delivery points			1	3	23	60
Number of persons on ART			1,200	4,000	13,183	30,600
HIV prevention activity reporting:						
Booklets distributed				220,810	426,902	520,587
Youth reached by life-skills HIV education				81,755	542,393	716,765
Hours of HIV radio broadcasts				643	2,019	1,255
Hours of HIV TV broadcasts				2,052	578	833
Persons trained for HIV/AIDS interventions				9,913	39,134	133,851
Employees, spouses reached in workplace				6,439	13,100	34,678
DHS HIV/AIDS knowledge, exposure, men						
Recognize abstinence as prevention	77.3				88.4	
Recognize being faithful as prevention	81.4				80.2	
Recognize condom use as prevention	72.8				75.1	
Ever heard of AIDS	99.7				99.5	
Could get a condom	79.1				75.4	
Could get AIDS from mosquito	24.2				23.3	
Could get AIDS by sharing food	10.0				5.7	
A healthy-looking person can have AIDS	91.7				91.9	
Know HIV can be transmitted from mother to child	75.7				81.1	
Know someone with or who has died of AIDS	81.5				69.6	
Spoke with spouse about avoiding AIDS	52.9				55.3	

Indicator	2000	2001	2002	2003	2004	2005
Woman ask to use a condom if husband had STD					79.4	
Heard radio spot on HIV/AIDS in past month					80.4	
Saw TV ads on HIV/AIDS in the past month					20.1	
Read an article about HIV/AIDS in the past					33.2	
DHS HIV/AIDS knowledge, exposure, women						
Recognize abstinence as prevention	67.1				75.0	
Recognize being faithful as prevention	77.2				67.6	
Recognize condom use as prevention	64.0				57.3	
Ever heard of AIDS	98.9				98.6	
Could get a condom if they wanted to	57.4				54.8	
Could get AIDS from mosquito bites	20.0				22.0	
Could get AIDS by sharing food	11.7				9.3	
A healthy-looking person can have AIDS	84.3				81.8	
Know HIV can be transmitted from mother to child	70.9				80.1	
Know someone with or who has died of AIDS	72.2				64.1	
Spoke with spouse about avoiding AIDS	51.7				49.0	
Woman ask to use a condom if husband had STD					81.4	
Heard radio spot on HIV/AIDS in past month					66.1	
Saw TV ads on HIV/AIDS in the past month					11.2	

Appendix E.1. HIV prevalence at ANC sentinel sites, Malawi, 1995 – 2003, all ages.

Site	Region	District	Location	1999	2001	2003	2005
1. Mzuzu	N	Mzimba	Urban	23.3	18.6	20.8	15.5
2. Rumphu	N	Rumphu	Semi-Urban	22.2	13.5	16.2	13.5
3. Nkhata Bay	N	Nkhata Bay	Semi-Urban	21.6	18.6	24.1	12.3
4. Mbalachanda	N	Mzimba	Rural	9.5	10.5	14.5	14.4
5. Kaporo	N	Karonga	Rural	6.6	17.4	20.5	12.7
Median				21.6	13.5	20.5	13.5
6. Lilongwe CH	C	Lilongwe	Urban	25.2	20.1	16.9	18.6
7. Mchinji	C	Mchinji	Semi-Urban	26.6	23.8	18.1	14.8
8. St. Annes	C	Nkhotakota	Semi-Urban	22.8	19.1	9.9	12.2
9. Ntcheu	C	Ntcheu	Semi-Urban	33.0	18.6	22	22.0
10. Thonje	C	Dowa	Rural	9.4	4.5	11.4	6.3
11. Kamboni	C	Kasungu	Rural	2.9	5.1	6.7	6.4
12. Kasina	C	Dedza	Rural	4.5	5	7.2	8.3
Median				22.8	18.6	11.4	12.2
13. Limbe QE	S	Blantyre	Urban	27.9	28.5	27.6	27.0
14. Mulanje	S	Mulanje	Semi-Urban	35.5	24.1	23.9	23.5
15. Mangochi	S	Mangochi	Semi-Urban	27.7	16.4	14.5	17.3
16. Nsanje	S	Nsanje	Semi-Urban	25.9	35.8	32.9	23.1
17. Milepa	S	Chiradzulu	Rural	14.9	15.8	15.1	18.6
18. Gawanani	S	Machinga	Rural	25.8	13.3	17.0	15.0
19. Mianga	S	Thyolo	Rural	21.7	16.9	23.2	19.3
Median				25.9	16.9	23.2	19.3
Median National				22.8	16.9	17.0	15.0
Median Urban				25.2	20.1	20.8	18.6
Median Semi-urban				26.3	18.9	20.1	16.1
Median Rural				11.8	11.3	14.8	13.6

Appendix E.2. HIV prevalence at ANC sentinel sites, Malawi, 1995 – 2003, age 15 to 24 years.

Site	Region	District	Location	1999	2001	2003	2005
1. Mzuzu	N	Mzimba	Urban	21.9	16.1	17.6	
2. Rumphu	N	Rumphu	Semi-Urban	20.7	11	15.4	
3. Nkhata Bay	N	Nkhata Bay	Semi-Urban	21.7	15	22.7	
4. Mbalachanda	N	Mzimba	Rural	11.6	9.6	12.4	
5. Kaporo	N	Karonga	Rural	16.9	11.6	18.4	
Median				20.7	11.6	17.6	
6. Lilongwe CH	C	Lilongwe	Urban	20.7	15.0	15.8	
7. Mchinji	C	Mchinji	Semi-Urban	27.1	21.7	18.2	
8. St. Annes	C	Nkhotakota	Semi-Urban	21.5	16.2	7.1	
9. Ntcheu	C	Ntcheu	Semi-Urban	34.1	17	18.6	
10. Thonje	C	Dowa	Rural	11.8	4.5	10.4	
11. Kamboni	C	Kasungu	Rural	3.0	5.4	5	
12. Kasina	C	Dedza	Rural	1.4	4.9	4.5	
Median				20.7	15.0	10.4	
13. Limbe QE	S	Blantyre	Urban	27.5	28.9	25.1	
14. Mulanje	S	Mulanje	Semi-Urban	34.4	20.3	19.8	
15. Mangochi	S	Mangochi	Semi-Urban	26.5	15.5	13.1	
16. Nsanje	S	Nsanje	Semi-Urban	26.4	35.2	31.8	
17. Milepa	S	Chiradzulu	Rural	10.2	10.3	24.4	
18. Gawanani	S	Machinga	Rural	13.8	7.8	17.5	
19. Mianga	S	Thyolo	Rural	13.2	14.7	11.1	
Median				26.4	15.5	19.8	
Median National				20.7	15.0	17.5	14.1
Median Urban				21.9	16.1	17.6	
Median Semi-urban				26.5	16.6	18.4	
Median Rural				11.7	8.7	11.7	

Appendix F.1. Malawi Regional HIV indicators, HIV and syphilis prevalence, risk behavior, prevention program intensity, 1999 – 2005.

North Urban

Indicator	1999	2000	2001	2002	2003	2004	2005
HIV and syphilis prevalence (%)							
Median HIV prevalence, ANC, all ages	22.2		18.6		20.8		
Median HIV prevalence, ANC, 15-24 year olds	21.7		15.0		17.6		
Median syphilis prevalence, ANC, all ages	2.5		2.0		0.2		
Median syphilis prevalence, ANC, 15-24 year olds	3.6		1.9		0.7		
HIV prevalence DHS 2004, male						13.7	
HIV prevalence DHS 2004, female						21.0	
Risk behavior							
Ever had sex, 15 to 19 year olds, male		33.3				19.1	
Ever had sex, 15 to 19 year olds, female		51.5				44.6	
Had non-cohabitating partner (NCP), male		9.3				5.8	
Unprotected last sex with NCP, all males		4.6				1.9	
Condom use last sex with NCP, males with NCP*		50.0				66.7	
Multiple NCP, male		2.7				0.0	
Paid for sex in last year, male		6.0				3.9	
Unprotected paid for sex, male		2.0				0.0	
Not knowing where to get a condom, male		4.6				2.9	
Not knowing where to get a condom, female		10.1				4.7	
Never tested, men		66.2				60.6	
Never tested, female		86.9				72.1	
Genital ulcer history, men		2.0				1.9	
Genital ulcer history, female		4.0				0.8	
Prevention program intensity							
Persons per test performed				8	8	8	5
Other corroborative evidence							
NU men lowest speaking to wife about AIDS (DHS)		53.0				44.2	
NU women lowest spoke with spouse AIDS (DHS)		52.0				40.7	
NU women lowest "sharing food" (DHS)		8.4				26.1	
NU women lowest "justified condom if STD" (DHS)		0.0				73.9	

*n<100

Appendix F.2. Malawi Regional HIV indicators, HIV and syphilis prevalence, risk behavior, prevention program intensity, 1999 – 2005.

North Rural

Indicator	1999	2000	2001	2002	2003	2004	2005
HIV and syphilis prevalence (%)							
Median HIV prevalence, ANC, all ages	15.6		15.5		18.4		
Median HIV prevalence, ANC, 15-24 year olds	14.3		10.6		15.4		
Median syphilis prevalence, ANC, all ages	2.5		2.9		0.2		
Median syphilis prevalence, ANC, 15-24 years	5.3		2.9		1.1		
HIV prevalence DHS 2004, male						3.8	
HIV prevalence DHS 2004, female						6.4	
Risk behavior							
Ever had sex, 15 to 19 year olds, male		41.2				49.3	
Ever had sex, 15 to 19 year olds, female		54.2				42.9	
Had non-cohabitating partner (NCP), male		14.3				15.6	
Unprotected last sex with NCP, all males		9.7				11.1	
Condom use last sex with NCP, males with NCP*		32.1				29.1	
Multiple NCP, male		4.3				4.0	
Paid for sex in last year, male		3.8				4.0	
Unprotected paid for sex, male		1.8				1.7	
Not knowing where to get a condom, male		14.8				11.7	
Not knowing where to get a condom, female		30.8				14.6	
Never tested, men		84.7				83.5	
Never tested, female		92.8				96.6	
Genital ulcer history, men		3.6				2.8	
Genital ulcer history, female		1.9				1.2	
Prevention program intensity							
Persons per test performed				109	48	32	13
Other corroborative evidence							
NR men, lowest ever head of AIDS (DHS)		99.2				99.2	
NR men, lowest "sharing food" (DHS)		15.3				7.7	
NR men, lowest "healthy person" (DHS)		80.2				86.9	
NR men, lowest women justified if STD (DHS)		0.0				77.0	
NR women, lowest condom if wanted (DHS)		38.9				38.6	

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Indicator	1999	2000	2001	2002	2003	2004	2005
NR women, lowest knowledge "mosquito" (DHS)		24.0				27.6	
NR women, lowest knowledge "healthy" (DHS)		82.5				75.6	
NR women, lowest knowledge mother to child		71.8				75.5	
NR women, lowest saw TV ad (DHS)		0.0				6.1	

*n<100

Appendix F.3. Malawi Regional HIV indicators, HIV and syphilis prevalence, risk behavior, prevention program intensity, 1999 – 2005.

Central Urban

Indicator	1999	2000	2001	2002	2003	2004	2005
HIV and syphilis prevalence (%)							
Median HIV prevalence, ANC, all ages	25.2		20.1		16.9		
Median HIV prevalence, ANC, 15-24 year olds	24.3		16.6		17		
Median syphilis prevalence, ANC, all ages	2.5		4.2		2.2		
Median syphilis prevalence, ANC, 15-24 years	4.8		4.1		2.1		
HIV prevalence DHS 2004, male						14.1	
HIV prevalence DHS 2004, female						9.5	
Risk behavior							
Ever had sex, 15 to 19 year olds, male		60.9				42.3	
Ever had sex, 15 to 19 year olds, female		57.0				35.4	
Had non-cohabitating partner (NCP), male		12.6				11.7	
Unprotected last sex with NCP, all males		4.7				6.2	
Condom use last sex with NCP, males with NCP*		63.0				47.1	
Multiple NCP, male		6.5				6.2	
Paid for sex in last year, male		10.2				7.6	
Unprotected paid for sex, male		4.7				2.7	
Not knowing where to get a condom, male		3.3				15.9	
Not knowing where to get a condom, female		9.6				24.1	
Never tested, men		72.6				76.6	
Never tested, female		92.8				96.6	
Genital ulcer history, men		8.8				4.8	
Genital ulcer history, female		7.7				5.6	
Prevention program intensity							
Persons per test performed				21	16	14	10

*n<100

Appendix F.4. Malawi Regional HIV indicators, HIV and syphilis prevalence, risk behavior, prevention program intensity, 1999 – 2005.

Central Rural

Indicator	1999	2000	2001	2002	2003	2004	2005
HIV and syphilis prevalence (%)							
Median HIV prevalence, ANC, all ages	4.5		5.0		6.7		
Median HIV prevalence, ANC, 15-24 year olds	3.0		4.9		5.0		
Median syphilis prevalence, ANC, all ages	0.0		2.0		1.3		
Median syphilis prevalence, ANC, 15-24 year olds	1.0		0.0		2.3		
HIV prevalence DHS 2004, male						6.1	
HIV prevalence DHS 2004, female						8.4	
Risk behavior							
Ever had sex, 15 to 19 year olds, male		60.6				53.1	
Ever had sex, 15 to 19 year olds, female		51.3				44.1	
Had non-cohabitating partner (NCP), male		13.9				10.0	
Unprotected last sex with NCP, all males		10.5				6.7	
Condom use last sex with NCP, males with NCP		24.0				32.4	
Multiple NCP, male		3.8				2.3	
Paid for sex in last year, male		5.1				5.8	
Unprotected paid for sex, male		3.2				2.4	
Not knowing where to get a condom, male		19.0				17.4	
Not knowing where to get a condom, female		29.9				30.3	
Never tested, men		88.1				86.4	
Never tested, female		84.1				79.7	
Genital ulcer history, men		3.2				2.9	
Genital ulcer history, female		6.9				6.9	
Prevention program intensity							
Persons per test performed				126	127	74	27
Other corroborative evidence							
CR men, lowest could get a condom (DHS)		72.3				67.3	
CR men, lowest could get AIDS by mosquito (DHS)		25.6				31.6	
CR men, lowest TV ad (DHS)		0.0				11.7	
CR men, lowest read article (DHS)		0.0				26.5	
CR women, lowest ever heard of AIDS (DHS)		98.7				97.6	

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CR women, lowest heard radio spot (DHS)		0.0				63.2	
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Appendix F.5. Malawi Regional HIV indicators, HIV and syphilis prevalence, risk behavior, prevention program intensity, 1999 – 2005.

South Urban

Indicator	1999	2000	2001	2002	2003	2004	2005
HIV and syphilis prevalence (%)							
Median HIV prevalence, ANC, all ages	27.9		28.5		27.6		
Median HIV prevalence, ANC, 15-24 year olds	27.0		24.6		22.5		
Median syphilis prevalence, ANC, all ages	7.1		4.9		4.7		
Median syphilis prevalence, ANC, 15-24 year olds	8.8		4.9		4.1		
HIV prevalence DHS 2004, male						19.0	
HIV prevalence DHS 2004, female						26.7	
Risk behavior							
Ever had sex, 15 to 19 year olds, male		56.6				46.0	
Ever had sex, 15 to 19 year olds, female		56.1				54.4	
Had non-cohabitating partner (NCP), male		12.8				7.4	
Unprotected last sex with NCP, all males		10.1				4.3	
Condom use last sex with NCP, males with NCP*		42.9				42.1	
Multiple NCP, male		8.7				3.1	
Paid for sex in last year, male		16.1				6.2	
Unprotected paid for sex, male		8.7				2.7	
Not knowing where to get a condom, male		1.7				6.2	
Not knowing where to get a condom, female		7.5				11.4	
Never tested, men		83.4				76.4	
Never tested, female		84.0				75.7	
Genital ulcer history, men		4.8				1.6	
Genital ulcer history, female		8.1				5.8	
Prevention program intensity							
Persons per test performed				22	21	20	11
Other corroborative evidence							
SU men, lowest knowledge of mother to child (DHS)		80.0				73.6	

*n<100

Appendix F.6. Malawi Regional HIV indicators, HIV and syphilis prevalence, risk behavior, prevention program intensity, 1999 – 2005.

South Rural

Indicator	1999	2000	2001	2002	2003	2004	2005
HIV and syphilis prevalence (%)							
Median HIV prevalence, ANC, all ages	21.7		15.8		17.0		
Median HIV prevalence, ANC, 15-24 year olds	13.2		10.3		17.5		
Median syphilis prevalence, ANC, all ages	2.9		3.8		4.9		
Median syphilis prevalence, ANC, 15-24 years	3.0		9.2		3.8		
HIV prevalence DHS 2004, male						13.1	
HIV prevalence DHS 2004, female						19.4	
Risk behavior							
Ever had sex, 15 to 19 year olds, male		73.9				64.7	
Ever had sex, 15 to 19 year olds, female		64.9				65.8	
Had non-cohabitating partner (NCP), male		14.8				8.4	
Unprotected last sex with NCP, all males		9.4				5.9	
Condom use last sex with NCP, males with NCP		36.5				29.6	
Multiple NCP, male		5.0				3.2	
Paid for sex in last year, male		13.4				10.5	
Unprotected paid for sex, male		7.4				6.6	
Not knowing where to get a condom, male		12.4				9.5	
Not knowing where to get a condom, female		24.5				15.6	
Never tested, men		85.8				86.6	
Never tested, female		92.1				84.5	
Genital ulcer history, men		4.8				3.4	
Genital ulcer history, female		9.1				5.2	
Prevention program intensity							
Persons per test performed				118	47	29	15
Other corroborative evidence							
SR men, lowest heard radio (DHS)		0.0				78.5	
SR men, lowest knowing died of AIDS (DHS)		75.8				52.7	
SR women, lowest knowing died of AIDS (DHS)		63.1				56.2	

Appendix G. Malawi district level triangulation.

District	HIV-related Observations	Refined hypothesis
North		
1. Chitipa	<ul style="list-style-type: none"> • DHS: lowest knowledge a healthy-looking person can have AIDS, women (59.1%) – and worsening • DHS: lowest recognizing condom use as prevention, women (42.5%) 	
2. Karonga	<ul style="list-style-type: none"> • ANC: Rising ANC HIV prevalence in Kapora rural site, all ages • HIV prevalence, Karonga Prevention Study, level HIV ANC prevalence in Kaporo (9.2% in 1999, 10.2% in 2001, 9.6% in 2003, 9.3% in 2004) • DHS: Highest sex with non-cohabitating partner, men (18.2%) • DHS: Highest unprotected sex, non-cohabitating partner, men (13.6%) – and rising • BSS Fishermen: 2+ NCP partners 12.8% (highest of 3 districts); 2+ casual partners 4.8% (highest of 3 districts); always used condoms with casual partner 33.3% (lowest of 3 districts); know where to get a condom 82.6% (lowest of 3 districts) • BSS Male Police: 3+ partners 11.4% (highest of 10 districts); 2+ casual partners 9.1% (highest of 10 districts) • BSS Male Vendors: ever had sex 92.1% (highest of 3 districts); GUD 8.8% (highest of 3) • BSS Female Primary Teachers: 3+ partners 4.2% (highest of 9 districts); any casual partner 4.0% (highest of 9 districts) • BSS FSW: genital ulcer 56.8% (highest of 6 districts) • DSS: higher HIV prevalence among non-farmers • DHS: Lowest ever heard of AIDS, men (98.5%) • DHS: Lowest knowledge healthy person can have AIDS, men (84.9%) • DHS: Lowest felt justified to ask husband to use condom if STD, women (71.0%) 	
3. Nkhata Bay	<ul style="list-style-type: none"> • ANC: HIV prevalence down, all ages and 15 to 24 years 	
4. Rumphu	<ul style="list-style-type: none"> • ANC: HIV prevalence down, all ages and 15 to 24 years • Highest Education among women; Lowest divorce –Reniers 	
5. Mzimba	<ul style="list-style-type: none"> • ANC: Rising ANC HIV prevalence in Mbalachanda rural site, all ages • ANC: Mzuzu site with declining HIV prevalence, all ages • DHS: lowest (4th quartile) female HIV prevalence (7.8%) 	

District	HIV-related Observations	Refined hypothesis
	<ul style="list-style-type: none"> • DHS: lowest (4th quartile) male HIV prevalence (5.7%) • DHS: lowest knowledge can get AIDS sharing food, women (16.5%) – and worsening • DHS: lowest recognizing abstinence as prevention, men (76.3%) 	
6. Likoma	<ul style="list-style-type: none"> • HIV prevalence Survey: (10.3%) Kohler, Helleringer • Multiple Partners / Sexual Networks (high, 2/3 population) Kohler, Helleringer • ANC: HIV prevalence (20%?) Kohler, Helleringer 	
Central		
7. Kasungu	<ul style="list-style-type: none"> • ANC: Rising ANC HIV prevalence Kamboni rural site, all ages • ANC: HIV prevalence lowest of all sites • DHS: lowest (4th quartile) female HIV prevalence (6.4%) • DHS: lowest (4th quartile) male HIV prevalence (4.4%) • DHS: lowest knowledge mosquito can transmit AIDS, men (38.7%) – and worsening • DHS: lowest knowledge mosquito can transmit AIDS, women (33.6%) – and worsening 	
8. Nkhotakota	<ul style="list-style-type: none"> • DHS: lowest could get a condom if wanted, women (38.3%) – and worsening 	
9. Ntchisi	<ul style="list-style-type: none"> • DHS: lowest saw TV spot on HIV/AIDS, women (3.4%) • DHS: lowest recognizing being faithful as prevention, women (53.1%) 	
10. Dowa	<ul style="list-style-type: none"> • ANC: rising ANC syphilis prevalence in Thonje rural site, 15 – 24 years • ANC: lowest HIV prevalence at ANC sites (tied with Kasungu) 	
11. Salima	<ul style="list-style-type: none"> • DHS: low (3rd quartile) male HIV prevalence (8.1%) • DHS: low (3rd quartile) female HIV prevalence (9.8%) • DHS: high (1st quartile) sex with NCP, male (14.8%) • DHS: high (1st quartile) unprotected sex last NCP, male (9.9%) 	
12. Lilongwe	<ul style="list-style-type: none"> • ANC: HIV prevalence down, all ages and 15 to 24 years • UNC ANC data: HIV prevalence down at ANC site (20.6% in 2002, 16.2% in 2003, 15.2% in 2004) • DHS: lowest (4th quartile) male HIV prevalence (7.1%) • DHS: lowest (4th quartile) female HIV prevalence (2.1%) 	
13. Mchinji	<ul style="list-style-type: none"> • DHS: Highest GUD history, women (12.1%) – and rising 	

District	HIV-related Observations	Refined hypothesis
	<ul style="list-style-type: none"> • ANC: Syphilis prevalence level in Mchinji semi-urban site, all ages and 15 to 24 year olds • ANC: HIV prevalence decreasing in Mchinji semi-urban site, all ages and 15 – 24 year olds 	
14. Dedza	<ul style="list-style-type: none"> • ANC: Rising ANC HIV prevalence in Kasina rural site, all ages • ANC: Rising ANC HIV prevalence in Kasina rural site, 15 – 24 years • DHS: Lowest access to condoms, men (Not: 29.0%) - and rising • DHS: Lowest could get a condom if wanted to, men (48.3%) – and worsening • DHS: Lowest access to condoms, women (Not: 42.9%) • DHS: Lowest testing, women (7.5%) • DHS: High (1st quartile) sex with multiple NCP, male (4.4%) – and rising • VCT: Lowest per capita VCT, 2005 (0.021 or 1 test per 48 inhabitants) • DHS: Lowest wife justified to ask husband to use condom if STD, men (66.7%) • DHS: Lowest saw TV spot on HIV/AIDS, men (7.0%) • DHS: Lowest read HIV/AIDS article, men (22.8%) • DHS: Lowest ever heard of AIDS, women (92.9%) – and worsening • DHS: Lowest recognizing being faithful as prevention, men (60.5%) • DHS: Lowest recognizing abstinence as prevention, women (56.9%) 	
15. Ntcheu	<ul style="list-style-type: none"> • ANC: Rising ANC syphilis prevalence in Ntcheu semi-urban site, all ages • ANC: HIV prevalence down in Ntcheu semi-urban site, all ages and 15 - 24 year olds • DHS: Lowest heard radio spot on HIV/AIDS, women (53.1%) 	
South		
16. Mangochi	<ul style="list-style-type: none"> • DHS: high (2nd quartile) female HIV prevalence (22.2%) • DHS: high (2nd quartile) male HIV prevalence (19.5%) • DHS: high (1st quartile) sex with NCP, male (13.2%) • DHS: high (1st quartile) CSW contact, last year, men (12.1%) • DHS: high (1st quartile) unprotected last CSW contact, men (7.4%) • DHS: highest ever had sex, all ages, men (92.6%) • DHS: high (1st quartile) ever had sex, women age 15 to 19 years (69.0%) – and rising • DHS: lowest knowledge sharing food, men (11.1%) 	

District	HIV-related Observations	Refined hypothesis
	<ul style="list-style-type: none"> • DHS: lowest heard HIV/AIDS radio spot, men (70.0%) • ANC: HIV prevalence down in Mangochi site, all ages • Bardou-O'Fallon; awareness of transmission high, but perceived risk low overall, higher among those with recent STI 	
18. Machinga	<ul style="list-style-type: none"> • ANC: HIV prevalence down in Gawanani rural site, all ages, syphilis down all ages and 15 – 24 year olds • DHS: low (3rd quartile) female HIV prevalence (15.0%) • DHS: low (3rd quartile) male HIV prevalence (8.5%) • DHS: Lowest testing, men (8.6%) – and worsening • VCT: Below average per capita VCT, 2005 (4.2% vs. 6.6%) • DHS: Highest CSW contact, last year, men (14.1%) • DHS: high (1st quartile) unprotected last CSW contact, men (6.6%) • DHS: Lowest knowledge mother to child transmission, men (55.6%) – and worsening • DHS: Lowest knowing someone who died of AIDS, men (21.7%) • DHS: Lowest speaking with wife about avoiding AIDS, men (35.9%) – and worsening 	
18. Zomba	<ul style="list-style-type: none"> • DHS: highest (1st quartile) female HIV prevalence (23.9%) • DHS: high (2nd quartile) male HIV prevalence (10.1%) • DHS: Highest unprotected CSW contact, last year, men (9.1%) – and rising • DHS: High (1st quartile) CSW contact, last year, men (12.0%) • DHS: Highest sex with multiple partners, men (5.3%) • DHS: High (1st quartile) ever had sex, male (90.4%) 	
19. Chiradzulu	<ul style="list-style-type: none"> • ANC: Rising ANC HIV prevalence in Milepa rural site, all ages • ANC: Rising ANC syphilis prevalence in Milepa rural site, all ages • DHS: High (1st quartile) ever had sex, males (90.7%) • DHS: Lowest knowing someone who died of AIDS, women (42.0%) 	
20. Blantyre	<ul style="list-style-type: none"> • ANC: level trend • Johns Hopkins ANC data: HIV prevalence down (27.3% in 1999, 25.7% in 2001, 22.8% in 2003) • DHS: highest (1st quartile) female HIV prevalence (22.4%) • DHS: highest (1st quartile) male HIV prevalence (20.5%) • ANC: HIV prevalence down, 15 – 24 years 	

District	HIV-related Observations	Refined hypothesis
	<ul style="list-style-type: none"> ANC: Syphilis prevalence down, all ages 	
21. Mwanza		
22. Thyolo	<ul style="list-style-type: none"> ANC: Rising ANC HIV prevalence DHS: highest (1st quartile) female HIV prevalence (24.0%) DHS: highest (1st quartile) male HIV prevalence (17.8%) DHS: high (1st quartile) sex with multiple NCP, male (4.7%) DHS: high (1st quartile) ever had sex, women age 15 to 19 years (67.5%) – and rising 	
23. Mulanje	<ul style="list-style-type: none"> DHS: high (2nd quartile) female HIV prevalence (21.7%) DHS: high (2nd quartile) male HIV prevalence (14.4%) DHS: high (1st quartile) ever had sex, male (91.0%) DHS: high (1st quartile) sex with NCP, male (12.4%) DHS: high (1st quartile) unprotected sex with last NCP, male (9.6%) DHS: high (1st quartile) sex with multiple NCP (4.5%) DHS: high (1st quartile) CSW contact last year, men (9.6%) DHS: high (1st quartile) unprotected last CSW contact, men (7.3%) ANC: HIV prevalence down in Mulanje semi-urban site, all ages, 15 – 24 year olds ANC: Syphilis prevalence down in Mulanje semi-urban site, all ages, 15 – 24 year olds DHS: Highest GUD history, men (6.7%) BSS, history of GUD, men: Male police officers 1.1%, Truckers 5.8%, Male secondary teachers 2.5%, Male estate workers 5.4%, Male primary teachers 3.1% DHS: Highest ever had sex, women age 15 to 19 years (69.9%) DHS: Lowest recognizing condom use as prevention, men (55.1%) PLACE, 2003: Females had higher rates of new partners than males in the last month; condom use is fairly high with new partners and low with regular partners because risk is perceived as lower with regular partners; condoms are available in less than one third of sites where people meet sexual partners. 	
24. Phalombe		
25. Chikwawa		
26. Nsanje	<ul style="list-style-type: none"> ANC: Rising ANC syphilis prevalence Nsanje semi-urban site, all ages 	

District	HIV-related Observations	Refined hypothesis
	<ul style="list-style-type: none"> • BSS, history of GUD, women: Female police officers 1.4%, Female secondary teachers 1.3%, Female border traders 2.0, Female primary teachers 3.3% • DHS: Lowest knowledge of mother to child transmission, women (69.0%) • PLACE, 2006: Half of the participants have received gifts or cash in exchange for sex; less than half of sites had a prevention intervention in the last 12 months; free condoms are distributed in less than 30% of sites; the age of sexual debut of participants is lower than the national average 	
27. Balaka	<ul style="list-style-type: none"> • DHS: lowest spoke with husband about avoiding AIDS, women (33.8%) – and worsening • Highest Divorce rate, lowest education rate among women; Reniers • Rapid remarriage- Miller 	

Appendix H. Question #2: What is the reach and intensity of HIV prevention efforts (among high risk populations) in Malawi from 2000 to 2005?

Indicator	2000	2001	2002	2003	2004	2005
Condoms distributed per each man	1.9	3.0	5.1	6.0	6.3	6.4
HIV tests done per 100 persons			1.7	2.4	3.1	6.6
Reasons for testing (MACRO):						
Current risk behavior, males		46.6	57.1	62.3	51.8	36.9
Past risk behavior, males		2.9	3.0	2.8	14.8	26.4
Partner's behavior, females		0	0.7	0.6	4.4	8.9
Partner ill/died, females		8.5	7.3	6.3	3.7	0.8
HIV prevention activity reporting:						
Booklets distributed				220,810	426,902	520,587
Youth reached by life-skills HIV education				81,755	542,393	716,765
Hours of HIV radio broadcasts				643	2,019	1,255
Hours of HIV TV broadcasts				2,052	578	833
Persons trained for HIV/AIDS interventions				9,913	39,134	133,851
Employees, spouses reached in workplace				6,439	13,100	34,678
DHS HIV/AIDS knowledge, exposure, men						
Never tested, men	84.8				83.7	
Recognize abstinence as prevention	77.3				88.4	
Recognize being faithful as prevention	81.4				80.2	
Recognize condom use as prevention	72.8				75.1	
Ever heard of AIDS	99.7				99.5	
Could get a condom	79.1				75.4	
Not knowing where to get a condom	13.0				12.8	
Could get AIDS from mosquito	24.2				23.3	
Could get AIDS by sharing food	10.0				5.7	
A healthy-looking person can have AIDS	91.7				91.9	
Know HIV can be transmitted from mother to child	75.7				81.1	
Know someone with or who has died of AIDS	81.5				69.6	
Spoke with spouse about avoiding AIDS	52.9				55.3	
Woman ask to use a condom if husband had STD					79.4	
Heard radio spot on HIV/AIDS in past month					80.4	
Saw TV ads on HIV/AIDS in the past month					20.1	

Read an article about HIV/AIDS in the past					33.2	
DHS HIV/AIDS knowledge, exposure, women						
Never tested, women	91.5				84.7	
Recognize abstinence as prevention	67.1				75.0	
Recognize being faithful as prevention	77.2				67.6	
Recognize condom use as prevention	64.0				57.3	
Ever heard of AIDS	98.9				98.6	
Could get a condom if they wanted to	57.4				54.8	
Not knowing where to get a condom	23.1				21.2	
Could get AIDS from mosquito bites	20.0				22.0	
Could get AIDS by sharing food	11.7				9.3	
A healthy-looking person can have AIDS	84.3				81.8	
Know HIV can be transmitted from mother to child	70.9				80.1	
Know someone with or who has died of AIDS	72.2				64.1	
Spoke with spouse about avoiding AIDS	51.7				49.0	
Woman ask to use a condom if husband had STD					81.4	
Heard radio spot on HIV/AIDS in past month					66.1	
Saw TV ads on HIV/AIDS in the past month					11.2	

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Appendix I.1 – Quantitative data sources used in Malawi triangulation

Data name	Type of source	Location	Years	Source
ANC	Surveillance	19 sites throughout country	1995 - 2003	NAC
DHS	Surveillance	Population-based	1996 2000 2004	NSO/ORC-Macro
1998 Census and annual projections	Demographic	National (15-54 year olds)	1998-2005	NSO
BLM	Programmatic	National	2001-2005	BLM
PSI	Programmatic	National	1994-2005	PSI
Government condoms	Programmatic	National	2002-2005	John Snow
Situational analysis	Surveillance	National	2002-2005	NAC/Lighthouse
MACRO	Programmatic	National	2000 2005	MACRO
AIDS case reporting	Surveillance	National	2000-2004	NAC
AIDS case reporting	Surveillance	National	2003-2005	MOH
STI clinic	surveillance	National	2002-2004	HMIS/BLM
Activity reporting system	Programmatic	National	2003-2005	NAC
Karonga DSS	Programmatic	Karonga (north)	Ongoing	London School of Tropical Medicine and Hygiene
UNC ANC clients	Programmatic	Lilongwe	2001-now	University of North Carolina
Queen's Elizabeth	Programmatic	Blantyre	1995-2003	Johns Hopkins
BSS	Surveillance	Population-based	2004	FHI

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PLACE, Nsanje	Research	Nsanje district	2006	NAC, CDC
PLACE, Mulanje	Research	Mulanje district	2003	CSR, CDC
MDICP	Research	Three rural sites in North, Central South	1999, 2001, 2004	University of Pennsylvania
Malawi Blood Transfusion Service	Surveillance	National	2004,2005	MBTS
UN Resource Center	Various	Various		UN Resource Center
Integrated Household Survey	Demographic	National	1998	NSO
Welfare Monitoring Survey	Demographic	National	2005	NSO
Lighthouse	Programmatic	Lilongwe	2002-2005	Lighthouse
Taiwan Medical Mission	Programmatic	Mzuzu	2001-now	Taiwan Medical Mission
MSF	Programmatic	Thyolo	1998-now (complete reporting from 2003)	MSF-Thyolo

Appendix I.2 – Reports and published papers used in Malawi triangulation

Author(s)	Title	Topic	Year	Location of Study	Peer-reviewed and published	Methods Used	Sample	Findings
Bentley, M.E. et al.	Perceptions of the role of maternal nutrition in HIV-positive breastfeeding women in Malawi	Breastfeeding, body image and HIV	2005	Periphery of Lilongwe	Peer-reviewed and published	In-depth interviews	22 HIV+ women living in semi-rural areas	-Women perceived larger body shapes as healthy, because fatness is considered a sign of good health -Several women believed that their nutritional status (body size) was declining because of their illness. -Women were concerned that breastfeeding would increase the progression of HIV
Bardon et al.	Factors associated with HIV/AIDS knowledge and risk perception in rural Malawi	Measures of risk perception and knowledge	2004	Mangochi	Peer-reviewed and published	Descriptive stats, multivariate regression	940 women and 661 men	HIV/AIDS knowledge does not necessarily translate into perceived risk. There is a gender difference in the influence of cognitive and behavioural factors on perceived risk.
Behrman, Kohler and Watkins	Social networks, HIV/AIDS and risk perceptions	Determinants of individuals' perceptions of their risk of becoming infected, and strategies of prevention	2003	Rural Kenya, Rumphu, Mchinji, Balaka	Not peer-reviewed as far as we know	Longitudinal survey data, quantitative and qualitative	1541 evermarried women, and 1065 married men	Social networks have significant effects on risk perception and adoption of new behaviours. The effect of social networks extends to the area of spousal communication about AIDS risk, and interactions with network partners tend to increase the probability of husband-wife communication about the disease.
Bracher M, Santow G, Watkins SC	Moving and marrying: modeling HIV infection among newlyweds in Malawi	Estimating proportion of males and females in rural Malawi who are already HIV positive when they marry	2003	Rural locations in Rumphu, Mchinji and Balaka	Published in Demographic Research	Microsimulation model using MDICP data; semistructured interviews, journals	Married men and women, elderly people, STI workers, young men	HIV infection is present in between 12 and 20 % of couples. Young women are more likely to be HIV-positive than men of the same age, but only 2% of brides are estimated to be HIV-positive.
Bryceson, D.H. et. Al.	Social pathways from the HIV/AIDS deadlock of disease, denial and	Rural livelihood strategies and social forms and HIV/AIDS	2004	Three rural villages in Lilongwe district	CARE international report	Survey, focus group discussions, key	16 FGD (men, women and school age	Too many to write here, but cover: -HIV prevalence -Kinship structure

Author(s)	Title	Topic	Year	Location of Study	Peer-rev/pub other	Methods Used	Sample	Findings
	desperation in rural Malawi					informant interviews	children) and 29 key informant interviews	-Rural livelihoods -Sexual behaviour -AIDS-afflicted households and support services -Aftermath of death and household reconstitution -Community economic, social and political restructuring
Center for Social Research, University of Malawi et. Al.	Avoiding unwanted pregnancy and sexually transmitted infections: a rural Malawi district study	Unwanted pregnancy and STIs	2004	Mangochi District	Multi-agency report	Quantitative surveys and focus group discussions	21 FGD men (ages 20-44) and women (ages 15-34)	Numerous topics (see paper p. 91): -pregnancy avoidance -STI and HIV avoidance -PMTCT -Infertility
Chimwaza, A.F. and S.C. Watkins	Giving care to people with symptoms of AIDS in rural sub-Saharan Africa	Caretaking and AIDS	2004	Balaka district in the Southern region of Malawi	Peer-reviewed and published	Interviews, surveys	15 care giver interviews and survey data	-care given by close female relatives -many did not know AIDS diagnosis but suspected it -financial burden not too heavy on caregivers
Chirwa, W.C.	Migrant labour, sexual networking and multi-partnered sex in Malawi.	Migration and sexual networking	1997	Unknown	Peer-reviewed and published	Interviews	Returned mine workers from South Africa	-Migration is a rite of passage, not just an economic phenomenon -Sex workers readily available near mines -Migrants have many sex partners but do not show or talk about it.
Crampin, Mia et al	Long-term follow-up of HIV positive and HIV negative individuals in rural Malawi	Effect of HIV on survival in rural Africa	2002	Karonga district	Peer-reviewed and published	Quantitative retrospective cohort study	Longitudinal followup of 197 HIV-positive and 396 HIV-negative people	Relative survival since initial test in HIV-positive individuals was similar across age groups with HIV-negative individuals.
Crampin, Mia, et al	Trends and measurement of HIV prevalence in	HIV prevalence and risk factors using population	2003	Karonga District	Peer-reviewed and published	HIV prevalence from	Men and women in Karonga	HIV prevalence increased from 1988-90 to 1991-93 to 1998-2001. It is higher among non-

Author(s)	Title	Topic	Year	Location of Study	Peer-rev/pub other	Methods Used	Sample	Findings
	northern Malawi	based data to assess accuracy of ANC surveillance				community controls from case control study		farmers. The increase is particularly marked in those with no education. ANC surveillance underestimated HIV prevalence in all but the youngest age group.
deGraft-Johnson, J et al	HIV voluntary counseling and testing services preferences in a rural Malawi population	HIV testing and attitudes towards testing	2005	Southern district, unnamed	Peer-reviewed and published	Quantitative survey, multivariate analysis	868 women aged 15-34, 648 men aged 20 to 44	Only 11% of men and 7% of women had been tested, but of those untested, 76% of men and 61% of women desired testing.
Forster P.G.	Prostitution in Malawi and the HIV/AIDS risk.	Prostitution and HIV/AIDS risk	2000	Zomba district	Peer-reviewed and published	-Discourse analysis	30 prostitutes	-Commercial prostitutes recognise risk, found no alternative and were fatalistic about contracting HIV -Some clients used condoms; others refused. -Prostitutes behavior primarily economically motivated
Hatchett L.A., et. Al.	Health-seeking patterns for AIDS in Malawi	Health seeking behaviours of families affected by AIDS	2004	Rural community of Khongoni Traditional Authority in the Lilongwe District	Peer-reviewed and published	-Semi-structured interviews	-26 family caregivers -20 patients with AIDS symptoms	-Traditional care and treatment by family used first, followed by remedies from traditional healers -Modern treatments used as a last alternative
Hellinger, Kohler	The structure of sexual networks and the spread of HIV in sub-Saharan Africa: evidence from Likoma island (Malawi)	Structure of sexual networks	Unknown	Likoma Island	Unknown	Quantitative: structured interviews with respondents, followed by mapping of sexual network HIV testing of respondents	Enumeration of all households, followed by interviews of as many 18-35 year olds as could be found in 7 selected villages, HIV testing	Density of sexual networks are not driven by a hub of highly active individuals, but instead inhabitants are linked by a complex and decentralized network.
Hellinger,	Social networks,	Importance of	2004	Rumphi,	Peer-reviewed	Fixed	Rural men	Social interactions on HIV have

Author(s)	Title	Topic	Year	Location of Study	Peer-rev/pub other	Methods Used	Sample	Findings
Kohler	perceptions of risk and changing attitudes towards HIV/AIDS: New evidence from a longitudinal study using fixed-effects analysis	social interactions to perceptions of the risk of AIDS, spousal communication about AIDS		Mchinji, Balaka	and published	effects analysis based on longitudinal data	and women in Malawi	significant effects on respondents' perception of risk. The dominant mechanisms – social learning and social influence – are found to vary by sex and region. Social interactions are an important vector of change
Humphreys, M, Muula, A	Attitudes towards premarital testing on HIV infection among Malawians	Factors influencing VCT and premarital testing on HIV	2004	National	Peer-reviewed and published	Quantitative analysis of 2000 DHS	3092 participants around the country	Willingness to have premarital VCT was associated with increased age, urban residence, and desire to keep results confidential. Knowledge of a person with HIV, testing location and other STD, as well as belief that abstinence protects against HIV, were inversely related to desire to take test.
Kaler	“My girlfriends could fill a Yanu-Yanu bus”: rural Malawi men's claims about their own serostatus	Risk perception	Unknown	Rural area in Balaka district	Unknown	Journals from conversations researchers had with local residents or overheard	Young males	HIV status is incorporated into ideas about what masculinity entails. Many men believe they are already HIV-positive, despite the absence of any indication that they are infected, and use this as an excuse for continued high-risk behaviour.
Kaler A.	AIDS-talk in everyday life: the presence of HIV/AIDS in men's informal conversation in southern Malawi.	Men's perceptions of AIDS in everyday talk	2004	Rumphi, Balaka, Mchinji	Peer-reviewed and published	150 journals	-Journals kept by 5 researchers	-Malawian communities divided over whether personal agency can make a difference in AIDS risk -Lack of consensus about worthwhile behaviour change to reduce risk
Kaler A	The moral lens of population control: condoms and controversies in Southern Malawi	Stories about condoms and their impact on attitudes	2004	Balaka	Peer-reviewed and published	Journals	Individuals in rural Balaka	Some Malawians view condoms as a coercive population control imposed by the national government or international cabal, which has a negative impact on the use of condoms.
Kusanthan	Knowledge,	HIV knowledge,	Nov-	50 secondary	Not peer-	50-60 in-	Randomly	HIV/AIDS knowledge is high

Author(s)	Title	Topic	Year	Location of Study	Peer-rev/pub other	Methods Used	Sample	Findings
	attitudes and practices of secondary school youth related to sexual and reproductive health in Malawi	personal risk perception, sexual experience, relationships and sexual practices, receiving AIDS knowledge, attitudes and sexual norms, condom knowledge, attitudes and practices, VCT	2001 to Feb 2002	schools in all 26 districts	reviewed, published by PSI	person interviews were conducted with students in school – quantitative	selected, male/female ratio representative of school population	among secondary students. Although secondary school pupils are worried about HIV/AIDS and know that a single sexual encounter is sufficient to contract the disease, many people still think that they can tell whether somebody has HIV or think that remaining faithful to one partner (in the absence of HIV test to confirm status) is an adequate HIV prevention strategy. Those who did not use a condom during their last sexual act are not significantly more likely to be worried that they might get (or have got) HIV than the total sample. Sexual activity and corresponding risk of HIV infection is relatively high among secondary school pupils, but frequency of sexual contact is low. The rate of condom use is high, though availability is a concern. Furthermore, there is clearly a need for condom demonstrations in schools to improve knowledge on the correct use of a condom. Female pupils clearly feel inhibited to purchase condoms compared with males, consequently improving access specifically to female youth should be considered. Demand for VCT is high.
Manyonga Limwame Kumwenda Paul	Evaluation of Youth Alert! Listeners' Club and Youth Alert! Mix	To evaluate the young people's attitudes and participation in YAM! Listeners' Club activities.	July-Dec. 2004	1 Listeners' Club in each district (8) where clubs were created	Not peer reviewed, published by PSI	Qualitative: focus group discussions	Youths age 10-20 in Listeners' Clubs and not in Listeners' Clubs	Members joined the Listeners' clubs to be kept busy, to learn more about HIV/AIDS and things they aren't told by their parents. Both members and non members find the topics aired on Youth Alert Mix relevant to their lives. Most members reported to have

Author(s)	Title	Topic	Year	Location of Study	Peer-rev/pub other	Methods Used	Sample	Findings
								changed their behaviour since they joined. At first parents had a negative attitude towards Listeners' club. They thought their children would be encouraged to have sex. They changed the attitudes when they saw the children changing their behaviour for the better. Some parents do not still approve of Listeners' clubs
Miller, Zulu, Watkins	Husband-wife survey responses in Malawi	Spousal disagreement on livestock, children, household items, communication on AIDS, fertility, family planning	1998	Rural villages in Rumphu, Balaka, Mchinji	Published in Studies in Family Planning, 2001	Semi-structured interviews	Married couples	Although most couples agree in their answers, when there is a disagreement, husbands typically say "Yes" while wives typically say "No." But in family planning and AIDS questions, agreement ranges between 61% and 76%. Couples in the North do not have significantly different answers, while the South and Center do.
Munthali (CSR)	Women, Cross-border trade and HIV/AIDS: A case study of Malawi	Vulnerability of women traders to HIV/AIDS infection, access to health ed, prev and tx services	Recent (2004 or after)	Blantyre	Report (Unknown if published)	Questionnaires, FGDs	Malawian Female border traders in the BL area	Focuses on specific risk group. BT have misperceptions of disease, low rates of condom use, high mobility. Few cases of forced sex during border crossing.
Munthali (CSR)	Adaptive strategies and coping mechanisms of families and communities affected by HIV/AIDS in Malawi	Coping strategies for families affected by HIV/AIDS	2002	N/A (Review of Malawi studies)	No	Review of literature	Malawi (some lit included is more geog specific)	Extended family primary choice for coping. Death of parents due to HIV/AIDS in family also results in dropping out of school, early marriage, etc. NGOs play some role in helping families cope (but not as much as families).
Munthali, Chimbiri, Zulu	Adolescent sexual and reproductive health in Malawi: a synthesis of research evidence	Youth attitudes and practices regarding sex and HIV/AIDS	2004	Various studies through the country	No, produced by CSR	Synthesis of multiple data sources	N/A	Knowledge of HIV/AIDS is high, but VCT uptake is low, though increasing. The major sources of information are youth clubs, radio, government health workers and friends. Condom use is low

Author(s)	Title	Topic	Year	Location of Study	Peer-rev/pub other	Methods Used	Sample	Findings
								among youth, and attitudes regarding gender roles in condom use remain poor.
Munthali A; Moore, A; Konyani, S; Zakeyo, B	Qualitative evidence of adolescents' sexual and reproductive health experiences in selected districts of Malawi	Adolescent sexual and reproductive health issues with a focus on prevention of HIV, STIs and unplanned pregnancy	2006	Blantyre, Rumphi, Ntchisi, Mchinji, Mangochi	No, produced by CSR	In-depth interviews	102 in and out-of school youth	Initiation ceremonies are a powerful force in youths' lives, especially in rural areas. Few adolescents preferred getting information about HIV from parents. Most said they had no problem getting information about HIV. Males reported having initiated sexual intercourse by verbally or physically convincing the female to have sex, and females described their sexual debut as pressured, coerced, or forced, and included transactional sex. In a hypothetical situation, most respondents felt confident that they could refuse sex.
Malawi Network of People Living with HIV/AIDS (MANET)	Voices for equality and dignity: qualitative research on stigma and discrimination issues as they affect PLWHA in Malawi	Stigma and discrimination of PLWHA	July 2003	-Phalombe in the southern region, Nkhokota and Lilongwe in the central region, Mzimba district in the northern region	Agency report	-Four focus group discussions	-62 men and women	-Access to care and treatment by PLWHA is limited, cost is often a limiting factor -PLWHA face negative attitudes from healthcare providers -Lack of post-test counseling and services. -Stigma when seeking VCT services
Francis Obare, Population Studies Center, University of Pennsylvania	The effect of non-response on population-based HIV prevalence estimates: the case of rural Malawi	Estimates the extent to which selective non-response, including refusal, biases the MDICP estimates of HIV prevalence	2006	Analysis of MCIDP data in three study areas	No	Sensitivity analysis, analysis of ANC versus MDICP data	From three MDICP districts: Rumphi, Mchinji, Balaka	Selection due to non-response does not appear to exert a significant downward bias in the population-based data used in MDICP.
Parker B et. Al.	Malawi behavioural	Attitudes toward	2004	-Karonga	Agency report	-Focus	Six	-High risk behaviour occurs when

Author(s)	Title	Topic	Year	Location of Study	Peer-rev/pub other	Methods Used	Sample	Findings
	surveillance survey (BSS) qualitative survey	HIV/AIDS and barriers to protecting oneself from infection		-Lilongwe -Salima -Nsanje		group discussions -In-depth interviews	respondent groups, both male and female -246 participants total	alcohol is used -Traditional practices can increase exposure -Many misconceptions about how HIV is transmitted persist -There is a fatalistic attitude about HIV -Young women exchange money for sex because of poverty
PSI Research	The dashboard: a tool for social marketing decision-making	Use of data as “dashboard” to guide decision making	2005	Various countries: Malawi not included	Programme Report	Surveys, MAP data, reports	Youth	More a methods report, but actual data in dashboards may be quite useful to this process, especially segmentation tables (e.g. those who use condoms vs. those who do not) as well as risk behaviors among specific groups (e.g. youth), attribution
Putzel, J., Munthali, A	HIV/AIDS and leadership in Malawi	Actions, ideas and records of performance of leaders in Malawi	2004	National	Submitted report for DFID	Literature review; interviews; focus groups	62 key actor interviews, focus groups with 44 people	1) Images of “the female temptress” reflect deep patriarchal norms that ignore male sexual behaviour 2) National AIDS campaign fails to engage with indigenous cosmologies and the concepts and symbols that govern the way ordinary people think about sex and experience the epidemic. 3) All sectors reticent to speak openly about sexual matters, which contributes to perpetuating stigma and cripples efforts to diagnose and treat people for sexually transmitted infections/HIV.
Rankin S.H. et.al.	Donkey Work: Women, religion, and HIV/AIDS in Malawi	Women, religion and HIV/AIDS	2005	-2 groups conducted at a conference and 1 at Malawi University	Peer-reviewed and published	-Focus groups	-39 adult women representing voluntary assistance groups, religious	-Women care for family and religious institutions do little to lighten their work burden. -Families don’t discuss sexuality and male and female children treated differently.

Author(s)	Title	Topic	Year	Location of Study	Peer-rev/pub other	Methods Used	Sample	Findings
							groups and university women	
Reniers, G	Marital strategies for regulating exposure to HIV in rural Malawi	Partner choice and divorce as means to avoid HIV infection	2004	Balaka, Rumphi and Mchinji	Not published as far as we know	Longitudinal MDICP data from 1998, 2001, 2004	1500 evermarried women and their husbands	Marital strategies are increasingly to prevent infection, which may have contributed to the stabilization of HIV prevalence rates. Although the strategies of both sexes are similar, women appear to be disadvantaged: men are not only more likely to be unfaithful but also in a better position to penalize infidelity with divorce.
Rimal, R.N., Tapia, M., Bose, K., Brown, J., & Mkandawire, G.	Exploring community beliefs, attitudes and behaviors and HIV/AIDS in eight Malawi BRIDGE districts	Describe perceptions, beliefs, norms and practices regarding HIV/AIDS prevention	2004	Mangochi and Mzimba	Agency Report	Focus group discussions	Ten groups (two boys, two girls, two men, two women, two elderly)	-Strong sense of hopelessness among participants -Girls engage in prostitution to earn money -Little discussion of sex and HIV prevention within families -Social rituals and religious ceremonies associated with sexual initiation of children
Smith K.P and S.C. Watkins	Perceptions of risk and strategies for prevention: responses to HIV/AIDS in rural Malawi	HIV risk-perception and prevention strategies	2005		Peer-reviewed and published	-Semi-structured interviews -Field journals	326 semi-structured interviews 150 field journals	-Malawians worry less about HIV/AIDS in 2001 than 1998. -Women report worrying about their husbands as a source for infection. -Men report worry about infection from extramarital partners.
Schatz, E.	'Take your mat and go': rural Malawian women's strategies in the HIV/AIDS era	Strategies used by women to prevent HIV infection	2005	Balaka, Rumphi	Peer-reviewed and published	In-depth interviews	50 ever married women	Strategies include discussing dangers of HIV with husbands; utilising social networks for advice and as advocates; confronting husband's girlfriends; divorcing men who do not adopt safer practices. These may not be the most effective prevention strategies, but do show that rural Malawian women feel they have some agency to protect

Author(s)	Title	Topic	Year	Location of Study	Peer-rev/pub other	Methods Used	Sample	Findings
								themselves.
Smith K.P.	Why are they worried? Concern about HIV/AIDS in rural Malawi	Factors that determine how much a person worries about HIV/AIDS	2003	Balaka, Mchinji, Rumphu	Peer reviewed and published online	MDICP longitudinal data from 1998, 2001	Evermarried women, their husbands	Levels of network worry and suspected spousal infidelity have strongest influence on respondent worry
Tawfik and Watkins (JHN, UPenn)	Sex in Geneva, sex in Lilongwe, and sex in Balaka	Compare perspectives on perceptions of women's motivations for extramarital partnerships from international, national, and local	2004	Balaka	No	Qualitative interviews (conducted in 2001)	Balaka	Whereas in Geneva and Lilongwe women are said to be motivated by money for survival, in Balaka they are said to be motivated not only by money for survival but also for attractive consumer goods, as well as by passion and by revenge for a husband's infidelity. Women have power and passion than are often described in Geneva and LL models.
Thornton R, et. Al.	Reactions to voluntary counseling and testing in rural Malawi	Voluntary Counseling and Testing (VCT)	2005	North, Center and south of the country	Published on the web	Ethnography	Research recorded conversations and observations in journals	-Despite mixed community opinions about the value of VCT, there was unexpectedly high participation in VCT.
Trinitapoli, J, and Regnerus, M	Religion and HIV risk behaviors among men: initial results from a panel study in rural sub-Saharan Africa							
Van den Borne F	"I am not a prostitute" Discords in targeted HIV/AIDS prevention interventions in urban and trading Centers in Malawi	-Women who have multiple-partner sex and their sexual networking (whether or not they identify as a prostitute or	2003	Urban and trading Centers in Lilongwe, Blantyre, Mangochi and Zomba	Working paper-Harvard Center for Population and Development studies	-Male field assistants posed as clients - observations -field notes	-124 women	-Women who exchanged money for sex did not identify as prostitutes. -Their sexual networks are neither purely commercial nor purely social. -These women are perceived as a threat because they do not follow

Author(s)	Title	Topic	Year	Location of Study	Peer-rev/pub other	Methods Used	Sample	Findings
		sex worker)				-focus group discussions -semi-structured interviews		cultural and social norms.
Walden V.M., et. Al.	Measuring the impact of a behavior-change intervention for commercial sex workers and their potential clients in Malawi	Impact evaluation of HIV/AIDS peer education programme	1999	Dedza, Mponela and Mchinji for sex workers Blantyre for truck drivers	Peer-reviewed and published	Focus groups	One focus group with truck drivers Six focus groups with sex workers	-Sex workers are highly mobile and don't bring peer education methods with them. -Women preferred peer educators from outside their own bar. -Sex workers stop using condoms when their boyfriend is regular. -Sex workers judged whether client has HIV/AIDS by appearance. -None of the truck drivers used condoms with their wives.
Watkins, SC	Navigating the AIDS epidemic in rural Malawi	Behavioural change in sexual risk in rural Malawians	2004	Rumphi, Mchinjie and Balaka	Peer-reviewed and published	Survey data from MDICP, 1997-2004, and qualitative data from field journals	Evermarried women and their husbands	There is a communal cultural change that will likely diminish the HIV epidemic, as well as limits to the power of those outside local social network to hasten the pace change. There is little silence or denial among rural Malawians. People are using locally developed strategies of prevention, including abstinence, fidelity, condom use, partner selection, divorce and renewed religious commitment.
Watkins and Chimbwete	Repentance and hope among Christians and Muslims in rural Malawi	Religious affiliation, reasons for religious commitment	2002+ (?)	Balaka	No	Survey (MDICP), exploratory qual interviews	MDICP survey participants in Balaka	Increased religious and revivalist participation. Greater participation in church activities—not only weekly services and prayer meetings, but also caring for the sick—and an intention to leave behind “bad behaviour” such as quarreling and womanizing and to adhere more closely to the expectations of the church for proper behaviour. The

Author(s)	Title	Topic	Year	Location of Study	Peer-rev/pub other	Methods Used	Sample	Findings
								motivations for conversion are various, and often multiple: illness, hopes for greater prosperity and, mentioned most often, repairing disrupted social relations that were troubling the individual in his or her daily life or were perceived to have implications for evaluation by God on the Day of Judgement.
Watkins, SC	Coping with AIDS in rural Malawi	How prevention strategies constructed, types of prev strategies used	2004	Balaka, Mchinji, Rumphu (MDICP)	Yes (?)	Longitudinal cohort survey plus ethnographic journals	Men and women in MDICP	See separate synopsis
Yoder, P. Stanley, and Priscilla Matinga	Voluntary counseling and testing (VCT) for HIV in Malawi: public perspectives and recent VCT experiences	Voluntary Counselling and Testing (VCT)	2004	Blantyre, Chiradzulu, Lilongwe, Dowa	Agency report	Interviews	200 men and women	-Respondents were afraid of testing for HIV. -Those who tested believed they had an exposure to HIV. -Participants felt counselling sessions were too short.
Zachariah R, Spielmann M, Harries A, et al	Sexually transmitted infections and sexual behaviour among commercial sex workers in a rural district of Malawi	STIs, unprotected sex among CSW	2003	Thyolo	Peer-reviewed and published	Interviewer - administered questionnaires, serosamples	1817 CSW	25% had an STI; 87% had sex while symptomatic, 17% without condoms.
Zulu E.M. and G. Chepngeno	Spousal communication about the risk of contracting HIV/AIDS in rural Malawi	Spousal communication about HIV/AIDS	2003	North, south and Center of country	Peer-reviewed and published online	In-depth interviews	80 men and 76 women	-Husbands and wives use subtle and gendered strategies to encourage fidelity. -They talk about the effect on their children's lives to encourage fidelity.

Appendix I.3 – Malawi studies and reports by theme

Thematic Area	Finding	Author
Knowledge		
Gaps in Knowledge	-HIV/AIDS knowledge is high among secondary students. Although secondary school pupils are worried about HIV/AIDS and know that a single sexual encounter is sufficient to contract the disease, many people still think that they can tell whether somebody has HIV or think that remaining faithful to one partner (in the absence of HIV test to confirm status) is an adequate HIV prevention strategy.	Kusanthan
	-Many misconceptions about how HIV is transmitted persist	Parker B et. Al.
	-Overestimation of transmissibility of HIV	Kaler
Influences of Changes in Knowledge/ Sources of Information	-Initiation ceremonies are a powerful force in youths' lives, especially in rural areas. Few adolescents preferred getting information about HIV from parents. Most said they had no problem getting information about HIV.	Munthali A; Moore, A; Konyani, S; Zakeyo, B
	-The major sources of information for adolescents are youth clubs, radio, government health workers and friends.	Munthali, Chimbiri, Zulu
	-The most popular sources of information for adolescents are health care workers and teachers. Parents are not a preferred source of information	National Adolescents Survey
	-The major source of information for most employed people by far is the radio, though they get some information from friends, health Centers and the TV.	BSS
	-Women's awareness benefits them when they receive information from friends, relatives, radio/TV and healthcare workers, but knowing someone who has AIDS or who has died is the most significant behavioural contributor to HIV for men and women.	Bardon O'Fallon
	-Little discussion of sex and HIV prevention within families. Both parents and children express a lack of self-efficacy regarding talking about sex with family members. Most males and females said they received no encouragement to not have sex.	Rimal, R.N., Tapia, M., Bose, K., Brown, J., & Mkandawire, G.

Thematic Area	Finding	Author
Risk		
Link between Knowledge and Risk	-HIV/AIDS knowledge does not necessarily translate into perceived risk. There is a gender difference in the influence of cognitive and behavioural factors on perceived risk.	Bardon et al.
	-Immigration into Karonga District and travel are important risk factors for HIV at all stages of the epidemic. HIV risks are higher in non-farmers, particularly in skilled manual workers, clerical workers and those in professional and managerial posts.	Crampin et al.
Perceptions of Risk	-Participants describe AIDS as a profound danger to themselves.	Cotts
	-Malawians worry less about HIV/AIDS in 2001 than 1998, but worry did not decline equally in all regions. Women in the central region and men in the north became slightly more worried about HIV/AIDS over time. -Women report worrying about their husbands as a source for infection. -Men report worry about infection from extramarital partners.	Smith K.P and S.C. Watkins
	-Among high school students, those who did not use a condom during their last sexual act are not significantly more likely to be worried that they might get (or have got) HIV than the total sample.	Kusanthan
	-Participants tend to focus on the impact of HIV/AIDS on the community, and action, while acknowledging the importance of individual self-preservation, stressed the importance of the community's survival. People expressed a lack of external controls.	Bridge Study
	-Commercial prostitutes recognize risk.	Forster P.G.
Fatalism	-Participants discuss pessimistic views about their ability to prevent infection.	Cotts
	-Commercial sex workers were fatalistic about contracting HIV.	Forster P.G.
	-Malawian communities divided over whether personal agency can make a difference in AIDS risk.	Kaler A.
	-There is a fatalistic attitude about HIV.	Parker B et. Al.
	-Strong sense of hopelessness among participants.	Rimal, R.N., Tapia,

Thematic Area	Finding	Author
		M., Bose, K., Brown, J., & Mkandawire, G.
Influences on Risk-Perception	-Social interactions on HIV have significant effects on respondents' perception of risk. The dominant mechanisms – social learning and social influence – are found to vary by sex and region.	Helleringer, Kohler
	-Levels of network worry and suspected spousal infidelity have strongest influence on respondent worry.	Smith K.P
Behaviour Change		
Testing Behaviour	-In community study, of those untested, 76% of men and 61% of women desired testing. Men and women prefer same-day testing. Couple-focused counselling was also preferred by many participants, especially women. Men who knew someone who died of AIDS or had AIDS were more likely to want to be tested.	deGraft-Johnson J, et al
	-Willingness to have premarital VCT was associated with increased age, urban residence, and desire to keep results confidential. Knowledge of a person with HIV, testing location and other STD, as well as belief that abstinence protects against HIV, were inversely related to desire to take test.	Humphreys, M, Muula, A
	-Despite mixed community opinions about the value of VCT, there was unexpectedly high participation in VCT. Participants particularly liked having testing offered in their homes and results given within their communities. Survey respondents tended to overestimate the transmission probabilities of HIV.	Thornton R, et. Al.
	-Respondents were afraid of testing for HIV -Those who tested believed they had an exposure to HIV	Yoder, P. Stanley, and Priscilla Matinga
	-More than 92% of males and females in the 15-19 age group know of a place to get an HIV test. The majority of them cite government clinics and hospitals. Less than 8% of females and 5% of males have been tested, but 75% of	National Adolescents Survey

Thematic Area	Finding	Author
	females and 82% of males want to be tested.	
Condom Adoption and Use	-Female pupils clearly feel inhibited to purchase condoms compared with males, consequently improving access specifically to female youth should be considered.	Kusanthan
	-Condom use is low among youth, and attitudes regarding gender roles in condom use remain poor.	Munthali, Chimbiri, Zulu
	-Most youth (15-19 years old) who had ever used contraceptives got them from a government clinic/hospital. Just 20% of females and 30% of males had ever seen a formal condom demonstration.	National Adolescents Survey
	-Sexual activity, and corresponding risk of HIV infection is relatively high among secondary school pupils, but frequency of sexual contact is low. The rate of condom use is high, though availability is a concern.	Kusanthan
	-Some Malawians view condoms as a coercive population control imposed by the national government or international cabal, which has a negative impact on the use of condoms.	Kaler A.
	-Some clients used condoms; others refused.	Forster P.G.
	-There was no difference in perceived condom availability and knowledge between condom users and non-users in 15-24 year olds, indicating that those factors were not barriers to condom use	PSI Dashboard
	-HIV status is incorporated into ideas about what masculinity entails. Many men believe they are already HIV-positive, despite the absence of any indication that they are infected, and use this as an excuse for continued high-risk behavior.	Kaler
	-87% of commercial sex workers had sex while symptomatic with STIs, 17% without condoms. Client pressure was the most important reason for unprotected sex work. Those who had fewer than two clients per day were also at higher risk for no condom use.	Zachariah
Influences (+/-) on Behaviour Change		
Linking Risk to	-Lack of consensus about worthwhile behavior change to reduce risk	Kaler A.

Thematic Area	Finding	Author
Knowledge		
	-Religious involvement may reduce the risk of new HIV infections among men in rural Malawi, and may subsequently also have protective effects for women as well. But regional differences shift the playing field substantially – even sporadic attenders in Rumphi report less cheating than regular attendees in Balaka, suggesting that regional differences in cultural norms about acceptable sexual practices that shape even the influence of personal religiosity.	Trinitapoli
	-Self-efficacy is an important factor for risk-avoidance and risk reduction among 15-24 year olds.	
Alcohol	-High-risk behaviour occurs when alcohol is used.	Parker B et. Al.
Poverty/Money	-Young women exchange money for sex because of poverty.	Parker B et. Al.
	-Girls engage in prostitution to earn money.	Rimal, R.N., Tapia, M., Bose, K., Brown, J., & Mkandawire, G.
	-Women in Balaka say they are motivated (to have sex) not only by money for survival but also for attractive consumer goods, as well as by passion and by revenge for a husband's infidelity.	Tawfik and Watkins (JHN, UPenn)
	-Prostitutes' behavior primarily economically motivated.	Forster P.G.
Traditional Practices	-Social rituals and religious ceremonies associated with sexual initiation of children.	Rimal, R.N., Tapia, M., Bose, K., Brown, J., & Mkandawire, G.
	-Traditional practices can increase exposure.	Parker B et. Al.
Social Networks	Social networks have significant effects on risk perception and adoption of new behaviours. The effect of social networks extends to the area of spousal communication about AIDS risk, and interactions with network partners tend to increase the probability of husband-wife communication about the disease.	Behrman, Kohler and Watkins
Adoption of	-ABCs not acceptable to participants; instead use cultural strategies to deal	Cotts

Thematic Area	Finding	Author
Alternative Prevention Strategies	with the epidemic.	
	-Marital strategies are increasingly used to prevent infection, which may have contributed to the stabilisation of HIV prevalence rates. Although the strategies of both sexes are similar, women appear to be disadvantaged; men are not only more likely to be unfaithful but also in a better position to penalize infidelity with divorce.	Reniers, G
	-Interventions that target women as “commercial sex workers” may miss women who do not consider themselves as CSW, whose sexual networks are neither purely commercial nor purely social.	Van den Borne
	-Husbands and wives use subtle and gendered strategies to encourage fidelity. -They talk about the effect on their children’s lives to encourage fidelity. -The size of the woman’s informal social network, accessing information about the disease from clinics, whether the couple have also discussed use of family planning or not, and extent of worry about contracting the disease affected spousal communication about HIV.	Zulu E.M. and G. Chepngeno
	-Strategies used by rural women to prevent HIV include discussing dangers of HIV with husbands; utilising social networks for advice and as advocates; confronting husband’s girlfriends; divorcing men who do not adopt safer practices. These may not be the most effective prevention strategies, but do show that rural Malawian women feel they have some agency to protect themselves.	Schatz, E
National Programming	-National AIDS campaign fails to engage with indigenous cosmologies and the concepts and symbols that govern the way ordinary people think about sex and experience the epidemic. -All sectors reticent to speak openly about sexual matters, which contributes to perpetuating stigma and cripples efforts to diagnose and treat people for sexually transmitted infections/HIV.	Putzel, J., Munthali, A