An Evidence-Based Policy Brief

Improving the Screening and Treatment of Hypertension in People Living with HIV

Full Evidence Brief For Policy

Included:
- Description of a health system problem
- Viable options for addressing this problem
- Strategies for implementing these options

Not included: recommendations
This policy brief does not make recommendations regarding which policy option to choose

Who is this policy brief for?
Policymakers, their support staff, and other stakeholders with an interest in the problem addressed by this policy brief

Why was this policy brief prepared?
To inform deliberations about health policies and programmes by summarising the best available evidence about the problem and viable solutions

What is an evidence-based policy brief?
Evidence-based policy briefs bring together global research evidence (from systematic reviews where possible) and local evidence to inform deliberations about health policies and programmes

*Systematic review: A summary of studies addressing a clearly formulated question that uses systematic and explicit methods to identify, select, and critically appraise the relevant research, and to collect and analyse data from this research

Executive Summary
The evidence presented in this full evidence brief for policy is summarized in an Executive Summary
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Preface

The purpose of this report

The purpose of this report is to inform dialogue among policymakers and stakeholders. It summarises the best available evidence regarding the design and implementation of policies for improving the active screening and treatment of hypertension in people living with HIV in Malawi.

The report was prepared as a background document to guide those engaged in developing non-communicable disease and HIV policies and people with an interest in such policies (stakeholders). It is not intended to prescribe or proscribe specific options or implementation strategies. Rather, its purpose is to allow stakeholders to systematically and transparently consider the available evidence about the likely impacts of different options to improve the active screening and treatment of hypertension in people living with HIV in Malawi.

How this report is structured

The policy brief contains two separate documents - an executive summary and this full report. The executive summary provides key messages and summarises each section of the full report.

How this report was prepared

This policy brief brings together global and local research evidence about the active screening and treatment of hypertension in people living with HIV. We searched for relevant evidence describing the problem, the impacts of options for addressing the problem, barriers to implementing those options, and implementation strategies to address these barriers.

Limitations of this report

The intent of this policy brief was to utilize the best available evidence. However, we found neither systematic reviews nor randomised controlled trials on this topic. As such, this policy brief is based largely on limited evidence from single studies found through focused searches and personal contact with experts. It should therefore be noted, as it is throughout this report, that given the lack of high-quality evidence we urge caution in drawing firm conclusions.

Summarising evidence requires judgements about what evidence to include, the quality of the evidence, how to interpret it and how to report it. While we have attempted to be transparent about these judgements, this report inevitably includes judgements made by review authors and judgements made by ourselves. We would also like to note that this report concerns management of hypertension in adults living with HIV and excludes paediatric patients.
**Uncertainty does not imply indecisiveness or inaction**

There is insufficient high quality evidence in regards to potential policy options to draw firm conclusions as to the best path forward. Nonetheless, policymakers must make decisions. Uncertainty about the potential impacts of policy decisions does not mean that decisions and actions can or should not be taken. The available evidence certainly points to the need for more research in this content area as well as suggests the need for carefully planned monitoring and evaluation if and when any policy change occurs.

“Both politically, in terms of being accountable to those who fund the system, and also ethically, in terms of making sure that you make the best use possible of available resources, evaluation is absolutely critical.”

(Julio Frenk 2005, former Minister of Health, Mexico)
The Problem

Background

Africa is facing a growing double burden of communicable and non-communicable diseases (NCDs). It is projected that by 2025 nearly three-quarters of people with hypertension (having elevated blood pressure i.e. systolic blood pressure of >140 and/or diastolic blood pressure >90 on 3 different readings) will be living in developing countries. In Malawi, according to the nationwide STEP’s survey, the national burden of hypertension is high with 33% of adults between the ages of 25 and 64 found to be hypertensive. Ninety four percent of these adults are either not taking anti-hypertensive medication or are simply unaware that they have hypertension (undiagnosed hypertension). While only limited data exists, the burden of hypertension in Malawi among people living with HIV appears to be at least as high as the general population. One small study (N=174) from Blantyre estimated that 46% of people living with HIV had elevated blood pressure and other cardiovascular risk factors.

Often, hypertension among people living with HIV is undiagnosed and subsequently left untreated. Several studies recommend the need for prevention and management of cardio-metabolic diseases, including hypertension, in people living with HIV.

Following these observations, Malawi’s Knowledge Translation Platform’s (KTPMalawi) Steering Committee created a NCD-HIV community of practice (COP) to synthesize the best available global and local evidence on the emerging problem of NCDs in people living with HIV and appropriate strategies for improvement. KTPMalawi’s Steering Committee was formed in 2013 and is comprised of national-level health policymakers, researchers and civil society members. The NCD-HIV COP prioritized improving the active screening and treatment of hypertension among people living with HIV as a primary area of concern to be addressed. Through a collaborative consultation process, the COP concluded that exploring hypertension within this well-defined population, who are already actively managed and may be at an increased risk for cardio-metabolic complications, provides an opportunity to effectively implement and test interventions. Lessons learned from an implementation process may then inform other interventions, such as those targeting a general hypertensive population.

Framing of the problem

It is important to clearly clarify the primary problem that the proposed policies are intended to address in order to ensure that appropriate options and implementation strategies are considered. The focus of this policy brief is the improvement of active screening and treatment of hypertension in people living with HIV. The evidence for different levels of hypertension and HIV service integration are brought forward in this brief. These strategies are four of many strategies that could be used to address this problem. Thus, it is important to consider how given options for integration will address the underlying problems and how they might complement or conflict with other strategies for addressing the unmet needs of people living with HIV and hypertension.

The decision to focus on hypertension and HIV was influenced by KTPMalawi steering committee members. This followed a priority setting exercise that considered several policy
demands. Hypertension and HIV services are an area covering a significant proportion of the population that is particularly vulnerable and could serve as a model for other chronic disease management.

The integration of services is based on the assumption that managers of HIV services are open to considering integration with other chronic diseases.

### Size of the problem

Hypertension is expected to surpass infectious disease as a primary cause of death in Africa over the next 20-30 years.\(^7\) In African adults, the rate of hypertension is reported to exceed 25% in many settings.\(^3\)\(^,\)\(^9\) A meta-analysis from 33 surveys in sub-Saharan Africa showed a pooled hypertension prevalence rate of 30%.\(^7\) Around one third of Malawian adults were reported to have hypertension in 2009;\(^3\) often this was undiagnosed and therefore untreated. The burden of hypertension is likely to increase over the coming decades due to population transition effects in Sub-Saharan Africa (SSA); urbanization, increasing wealth and associated dietary and life-style changes. Increasing age further contributes to this epidemiologic transition, with a considerable improvement in life expectancy (from 37 to 58 years of age) over the past decade in Malawi.\(^9\) As a result of these changes, the World Health Organization estimates that the burden of hypertension in SSA will double by the year 2025.\(^1\)

High levels of hypertension have also been seen in Eastern Africa.\(^7\) A retrospective analysis of the electronic medical records of a large HIV treatment program in Western Kenya showed a 24% prevalence rate of elevated blood pressure (15%) or hypertension (9%) within program participants.\(^10\) A recent Tanzanian study showed that HIV infected adults on ART also had a high prevalence of hypertension (28.7%).\(^11\) Within these Tanzanian study participants living with HIV and hypertension co-morbidity; 75% were undiagnosed, 85% untreated and greater than 95% had uncontrolled hypertension.\(^11\) In addition, hypertension has been shown to be common among people living with HIV in Malawi.\(^4\) One small study conducted in Blantyre, showed that 46% of adults living with HIV had elevated blood pressure.\(^4\) HIV and antiretroviral drugs (ARVs) are correlated with an increased risk of cardiovascular diseases. This is compounded by the increased life expectancy of patients due to ART, resulting in longer mean exposure to ARVs and a higher mean age of people living with HIV and receiving ART, though the long-term effects of such therapy on cardiovascular disease remain uncertain.\(^12\)

Uncontrolled hypertension is known to lead to serious complications, such as stroke, heart-failure, cardiovascular disease, renal failure, and blindness. Although the prevalence and incidence of these complications in the general population of Malawi is not well studied, they are identified as common reasons for admission to medical departments in Malawi.\(^33\)
Factors underlying the problem

Several factors impact on the prevalence of hypertension in people living with HIV:

Organization and Delivery arrangement
Malawi lacks a well-established national hypertension screening and treatment programme. Health facilities often lack simple diagnostic treatment and experience long stock outs of hypertensive medications. Health system arrangements, such as the vertical, disease-specific nature of Malawi’s HIV programing, likely contribute to this problem. The current HIV/AIDS management policy does not include screening for hypertension within HIV clinics.

Patient and Providers
Patient and provider factors compound the problem. Patients that have dual diagnosis often need further clinical support given the more complex nature of multiple treatment regimes. Often dual diagnosis patients are asked to attend separate clinic days, increasing transport expenses and time commitment.

A paucity of in-service training programs for health workers on current trends and management of hypertension results in low awareness among people living with HIV and health workers of the importance of screening for and treatment of hypertension. Health care workers who are staffing HIV clinics are often overburdened and therefore struggle to provide the essential components of HIV care alone. Additionally, Malawi’s HIV program has specialized providers that are often only treating HIV, leaving other co-morbidities undiagnosed and untreated.

Financing Arrangements
Finally, funding mechanisms may play an underlying role in affecting the problem as vertical HIV clinics are funded and assessed on providing quality HIV care and treatment, with no metrics or encouragement to manage hypertension. Funding to support hypertension screening and treatment is limited in Malawi.
In summary,
There is a high burden of hypertension in Malawi and the prevalence seems at least as high among people living with HIV. Although people living with HIV attend health care clinics regularly, the vast majority who are hypertensive are neither diagnosed nor treated for hypertension since:

1. Malawi lacks a well-established national hypertension screening and treatment programme.
2. The national HIV programme has not prioritized hypertension and does not provide tools and means to integrate care for NCD co-morbidities.
3. Staff in the national HIV programme are overburdened by implementing the essentials of HIV care and
4. Financing for the screening and management of hypertension is limited.
Four Policy Options

The NCD-HIV COP lays out below the best available local and global evidence on four possible policy options aimed at improving the active screening and management of hypertension among people living with HIV. The first three options described below are mutually exclusive as they are distinct health facility arrangements and would not be implemented concurrently in the same health facility. The fourth policy option, however, should be viewed as complimentary to any of the three proceeding options as it can supplement the other health facility-based policy options.

An underlying principle assumed within the development of these policy options is that there is, in fact, a large undiagnosed hypertensive cohort within actively managed people living with HIV in Malawi as described in the problem section above. Potential enablers and barriers to the implementation of these policy options are described below in the implementation considerations section.

Policy option 1: Integrating the Screening and Treatment of Hypertension into Existing HIV Clinic Structures

Description and Rationale for Option 1

From a health services perspective, chronic HIV infection and hypertension pose very similar challenges, as they both need long life treatment, regular monitoring and a reliable drug supply chain. Hypertension and HIV are also both diagnosed through simple screening tests and involve similar models of care: promotion of healthy lifestyle behaviours, compliance to treatment, continuity of care and active involvement of the client and family in care. Thus, integrating management of these two conditions may be one option for addressing hypertension in people living with HIV.

Malawi’s HIV program has successfully developed and implemented a high quality HIV programme throughout the country. The scale and effectiveness of Malawi’s HIV program has been well documented. The national HIV programme may provide a platform to support hypertension screening and treatment in people living with HIV. With integrated care, all people living with HIV who are regularly seen by pre-ART or ART providers would be actively screened for hypertension. A nurse, non-health peer counsellors or other trained staff member could provide this screening in the waiting room. For those with hypertension, a clinician could provide treatment during the ART consultation session. Regular blood pressure screening could be encouraged so that those with normal blood pressure can be screened again according to their ART scheduled clinic visits. Only those patients with uncontrolled raised blood pressure could be referred for further management at a secondary or tertiary health facility.
The Current Application of Hypertension Screening and Treatment in ART Clinics in Malawi

In Malawi, ART services were scaled up to private and public health facilities between 2004 and 2008. The backbone of this scale-up was the development of specialized outpatient clinics for HIV Care within health centres and hospitals. These ART clinics initially focused exclusively on the treatment of people living with HIV. However, over the last several years several sites have integrated HIV and TB screening and treatment programmes. This limited integration could be seen as a natural progression of a health system arrangement; as people living with HIV are now living longer, they are developing comorbidities that need to be screened for and treated.

The Partners in Health Neno Clinic and Lighthouse trust in Lilongwe are the only sites in Malawi that we are aware of that are providing integrated hypertension and HIV screening and treatment. The Neno site, however, has also included screening and treatment for other NCDs. This approach will be further discussed in policy option 3 – a chronic care clinic approach.

Available Evidence on the Potential Impacts of Integrating the Screening and Treatment of Hypertension into Existing ART Clinic Structures

Searches using multiple key words and databases as well as correspondence with experts in the field, yielded no systematic reviews that discussed patient outcomes from the integration of hypertension and HIV screening and treatment. We have therefore relied on individual studies as described below. Even when looking at individual studies, data on hypertension and HIV integration was severely limited. We have therefore included studies that also looked at the integration of HIV and other NCD screening and treatment where we believe the lessons learned are relevant. Given the above, we urge caution in drawing firm conclusions from the available data for this policy option.

While there is a distinct lack of studies that include patient outcomes from integrated hypertension-HIV screening and treatment, multiple authors have put forward peer-reviewed published opinion pieces that promote the merit of integrating NCD screening and treatment with HIV management. This argument is based primarily on the similarity of the health care needs for both HIV and NCD patients. A 2014 review on national responses to HIV and NCDs found that these epidemics share many common attributes including slow progression, an asymptomatic stage, and that dual diagnoses can have detrimental interactions. Furthermore, the review noted similarities in requirements of treatment services including robust health systems, multidisciplinary teams, long term monitoring, and concurrent prevention efforts.

The integration of management of hypertension and HIV in Malawi and East Africa has been previously discussed in a number of studies. In 2009, Harries and colleagues suggested utilizing Malawi’s ART framework as a platform for managing NCDs, including hypertension. In a recent study from Uganda, Mateen et al found high rates of hypertension in a large HIV cohort and proposed that regular hypertension screening and appropriate treatment should be considered an essential element within HIV clinics. Another study in Tanzanian showed high levels of elevated blood pressure and suggested that aggressive hypertension screening, diagnosis, counselling and treatment should be introduced in HIV
Clinics in Sub Saharan Africa. The Kenyan retrospective analysis also suggested that the care of HIV infected patients in sub-Saharan Africa should include both identification and management of associated cardiovascular risk factors.

There is some evidence that specific NCDs may benefit from the strong systems already in place for HIV programs. A recent study from Ethiopia found that when HIV-specific standard operating protocols and provider support tools (wall posters, pocket guides, and desktop references) were adapted to NCD care, documentation improved dramatically. The documentation of blood pressures rose from 45% to 80% over 6 months and adherence assessment documentation rose from 2% to 77% over the same time period. Patient satisfaction identified through focus groups and key informant interviews, was also found to be higher.

We did not find any evidence on the effectiveness of integrating care for hypertension into ART models in terms of patient outcomes. If however, HIV programs in countries like Malawi are considered to be a primary care model, there is some evidence that integrating targeted NCD interventions into a primary care model can be successful. A nursing care model for NCDs in South Africa showed that when using stepwise diagnostic and treatment protocols, nursing staff controlled a majority of patients with hypertension, diabetes, and asthma. This study exemplified how task shifting by nurses can improve outcome of hypertensive patients. This may have cascading benefits in the HIV Clinic, if the staff is task shifted to integrate both HIV and NCD. A review of case studies on HIV and NCD programme in Malaysia, Sri Lanka, South Africa and Ethiopia suggested the integration of HIV and NCD services may reduce overlap and maximize efficiency. Despite the different patterns of disease and relative magnitude of the burden of disease in these four countries integration was equally effective. However, this review found that integrated NCD programs were not effectively implemented. They were not afforded enough priority in sector-wide approaches or they were focused on disease or risk factor specific interventions. In contrast, more funding – though typically external – was available for robust HIV programming. Differences are further magnified as HIV programs tend to be mature and focused on quality and sustainability, whereas NCD programs are younger and thus focused on advocacy and putting appropriate systems into place.

Equity, costs, monitoring and evaluation

Equity
Equity is an important issue to consider when delivering chronic care. There is limited research addressing equity of access to integrated HIV and hypertension care. Lessons can be learned from other integration efforts and from trends in socioeconomic status that have been previously described. An important finding is that in low-income countries, patients suffering from a dual burden of infectious and non-communicable diseases tend to emanate from lower socioeconomic statuses as well as from migrant populations.

Costs
Distance from the hospital is a known risk factor for non-adherence to anti-hypertensive treatment. In Malawi’s Neno District, the average travel time to clinic for hypertensive patients is 2.4 hours. Despite the risk of increased waiting times posed by longer integrated care consultations the opportunity to address all relevant medical issues
during one consultation may limit subsequent appointments and therefore lower overall patient travel time and costs.

The effectiveness of integrated TB-HIV programming has been offered as an argument for integrating HIV and NCD care. Delivery of HIV and NCD care independently may be leading to redundant systems, increasing costs. This integration potentially has more benefits in resource-limited settings that lack routinely available NCD services. Joint HIV and NCD interventions may also help to avoid competition for limited funds and other resources. For example, an analysis of integrating cervical cancer into HIV care found that integrating cervical screening programme into the existing HIV testing facilities has the potential to improve the uptake of cervical cancer screening in people living with HIV/AIDS. The utilization of existing infrastructure has the potential to facilitate scale-up, and decrease barriers to access.

There are likely to be upfront costs to integrating HIV and hypertension care and treatment. Foreseeable costs may include the development of support tools, training or re-training of the health workers, and provision of the requisite clinical equipment in order to provide patient care over a wider range of conditions. Continuity of chronic disease service delivery also requires consistent drug supplies, as well as human, and other resources. Lamptey et al found that integrating cardiovascular disease care into HIV care to be feasible in Kenya but noted challenges, including frequent staff turnover, space constraints for expanded services, referral linkage, and supply chain management.

**Monitoring and Evaluation**

The management of integrated chronic disease also requires good referral and information systems, including regular monitoring and evaluation, as well as auditing of the quality of care provided. Baobab is currently testing a NCD Electronic Medical Record system that could link HIV and NCD patient monitoring.

Integrating the screening and treatment of hypertension into existing HIV programme clinic structures may be an effective approach to improving the outcomes of hypertensive people living with HIV. However, given the limitations of the available evidence, priority should be given to rigorously evaluating the effectiveness and cost-effectiveness of this approach prior to or in conjunction with any scale up. Careful planning is needed to ensure that HIV providers are adequately trained and provided with the necessary equipment to provide care outside of the traditional HIV treatment (see implementation considerations).
Policy option 2: Hypertension screening within HIV Clinics and Subsequent Referral

**Description and Rationale for Option 2**

Policy option 2 mimics policy option 1 by leveraging existing HIV clinic structures to diagnose hypertension within a cohort of people living with HIV. As in policy option 1, people living with HIV could be screened for hypertension at Pre-ART or ART clinics, either by a nurse, non-health peer counsellors or other trained staff member. Patients found to be hypertensive would then be referred to a general outpatient clinic or non-communicable disease clinic within the same health facility for further management of their hypertension. These patients would still receive their HIV care within the HIV clinic but the ART provider would not be directly involved in the management of the patient’s hypertension. Patients who are normotensive could be screened at regular intervals and could receive health lifestyle advice. This option allows for identification of undiagnosed hypertension among people living with HIV with referral to the appropriate clinic following the specific health facilities’ treatment guidelines.

**The Current Application of Hypertension Screening and Referral at Pre-ART and ART Clinics in Malawi**

Monitoring for hypertension and other NCDs is not routinely performed at HIV clinics in Malawi. Only one pilot project has reported early data on the addition of hypertension screening into HIV services; in Neno District, Partners In Health has piloted a hypertension screening programme into HIV community and clinic based HIV activities (see below).

**Summary of Existing Evidence on the Potential Impacts of Integrating Hypertension Screening and Subsequent Referral into Pre-ART and ART Clinics**

There is limited documentation of programs integrating screening for hypertension and subsequent referral into HIV care models. In Neno District Malawi, a pilot project supported by Partners In Health has integrated hypertension screening into community and clinic based HIV activities. Early results show that 12% of community-screened patients were referred for hypertension management. However, only 20-25% of these referrals were enrolled in the NCD clinic. This low percentage is largely thought to be due to the large distances travelled to hospital-based hypertension clinics. This low percentage was also seen in patients screened at the HIV clinic within the same health facility as the NCD clinic, though no same-day appointments were available, which may have presented a large barrier to patient enrolment.

Given the limited evidence of screening programs for hypertension in HIV care models, we can look to some hypertension screening programs that have been integrated into existing HIV testing infrastructure. Though this is often done in the community (see option 4) Govindasamy et al. looked at screening for NCDs, including hypertension, during mobile HIV-testing campaigns in Cape Town, South Africa. The authors found that out of 9,806 individuals screened, 58.1% had elevated blood pressure. Authors also reported linkages to follow-up care for hypertensive patients (50% linked to subsequent hypertension care within one-month) to be equivalent to patients testing positive for HIV (51%). However, as we
explore the implications of hypertension screening within HIV services and subsequent referral, possibly on a following day, it is important to note that the potential degree of loss of linkage to care that can be expected. Quantifying this loss and exploring acceptable loss rates has not been explored.

**Equity, Costs, Monitoring and Evaluation**

**Equity**
There is no literature on equity considerations specifically regarding option 2 although it may still be argued that the screening for hypertension among people living with HIV attending HIV Clinic will provide equal opportunity for early detection and management of hypertension regardless of the socioeconomic status.

**Cost**
There is also no evidence delineating cost or cost-effectiveness of hypertension screening and subsequent referrals within Pre-ART and ART clinic models. However, one could imagine that this option may be more easily achieved with minimal systems input other than basic training for HIV staff and adequate blood pressure equipment. Any cost-effectiveness comparison is speculative, but it's likely that screening alone is more easily achieved than screening and integrated treatment. Evidence from a Ugandan study showed feasibility of multi-disease campaign offering preventive, diagnostic, treatment and referral services in a community setting which could be even more feasible in a clinic setting.¹⁸

**Monitoring and Evaluation**
Close monitoring of patient referrals and rate of linkage to care would be necessary for implementation of hypertension screening and referral in HIV clinics. In order to evaluate the effectiveness of the referral system there is a need for comprehensive monitoring and evaluation of equity and efficiency within the independent NCD clinics.

Given the limitations of the available evidence, priority should be given to rigorously evaluating the effectiveness and cost-effectiveness of this approach prior to or in conjunction with any scale up.
Policy option 3: Development of a Comprehensive Chronic Care Clinic Model

Description and Rationale
The long-term management of chronic health conditions, both communicable and non-communicable, requires regular appointments, medication adherence support, side effect management, laboratory monitoring, defaulter tracing as well as screening and education. This policy option suggests a new model of care to take advantage of these similarities, where multiple NCDs and HIV chronic care are combined and offered at one point of care delivery within the health system – a chronic care clinic (CCC). All chronic disease-specific clinics could be merged into one clinic with all chronic conditions managed by the same healthcare workers. Those living with HIV and NCDs will have both conditions managed on the same day during the same consultation. An integrated chronic care clinic model could run in parallel to acute care services in primary health care facilities with coordination between the two to ensure patients can move freely when needed.

In view of the multitude of NCDs, this policy option proposes to initially include the integration of diagnosis and treatment of HIV with hypertension, diabetes and chronic pulmonary conditions into a chronic care clinic model as limited evidence suggests that the integration of these chronic conditions may be feasible in resource limited settings.\(^{37}\)

The Current Application of Chronic Care Clinics in Malawi
In Malawi, there are no Comprehensive Chronic Care Clinic models currently being implemented. There are, however, pilot CCC that integrate the management of several selected chronic conditions; one includes HIV. In Neno, Partners in Health has included HIV in their CCC model.\(^{29}\) Whereas an acute care model focuses on patients reporting to care on an as-needed basis, the CCC model sees scheduled patients who have been previously diagnosed with a chronic condition. These patients are enrolled in the CCC cohort and are given routine appointments for medication administration and monitoring for adherence, side effects, and routine laboratory testing. The Neno site is combining the care for HIV into this CCC model where other chronic conditions such as hypertension, cardiovascular conditions, diabetes, asthma, epilepsy, and mental health are also addressed. An integrated NCD clinic at Kasungu District Hospital has seen a >100% rise in hypertension and >200% increment in diabetes patient cohorts between July 2012 and December 2013. However, this model did not include HIV\(^{38}\).

In 2013 an integrated electronic medical record system (EMRS) for chronic NCDs including hypertension, diabetes, asthma and epilepsy was developed and is currently being implemented at two sites, one tertiary health facility and one primary health facility in Lilongwe. The EMRS is aligned to the manual protocols and patient master cards, thereby supporting chronic clinical care.

At Queen Elizabeth Central Hospital in Blantyre, the diabetic clinic has been developed based on the ‘Direct Observed Therapy, Short Course’ approach. During consultation, clinicians screen for diabetic complications and hypertension and encourage patients to take an HIV test. Knowledge of HIV status among diabetic patients is taken as an essential component of care. The electronic dashboards also alert patients to those with unknown HIV status.
Currently, patients with HIV and NCD comorbidity generally are seen in health care clinics on different days. There are hypertension and diabetes standalone clinics in all central hospitals and in >60% of district hospitals; other chronic care clinics exist for epilepsy and mental health. Effort to integrate the care for different chronic NCDs has been applied differently at different pilot sites in Malawi. The Kasungu model noted above combines cardiovascular disease, diabetes and chronic lung diseases whereas the Lilongwe model incorporates an additional NCD condition, epilepsy. The Lilongwe & KCH CCC models have an integrated M&E system for all major NCDs but different points of delivery for the mental health and epilepsy component.

**Summary of Existing Evidence on the Potential Impacts of Developing Chronic Care Clinics**

A literature search found few relevant papers and no relevant systematic reviews that discussed outcome or effectiveness of chronic care clinics. An often cited article by Janssens et al describes the development of two chronic care clinics, which included HIV in Cambodia. These Cambodia CCCs integrated care for HIV, hypertension, diabetes, epilepsy and thyroid disorders. Databases for HIV and non-HIV patients were separated. Physicians and nurses received training in principles of chronic disease management and a patient centred approach in advance and counsellors provided “a series of activities complementary to the medical consultations.” In these CCCs there was a rapid expansion of the patient population and a sustained influx of patients with diabetes despite having crowded waiting rooms with HIV patients. The authors saw this as an indication that the clinic was accepted by both groups of people. There were satisfactory outcomes for all groups, although there was a high defaulter rate among diabetics who were fee paying within the first 3-months, after this period 90% remained part of the cohort at 24 months of follow-up. At 24 months on HAART only 3% of HIV patients, who were not paying fees, were lost to follow-up. This is the only paper evaluating a chronic care clinic that includes HIV care that we could find in the literature.

There is need for more implementation research and piloting of this model of care to produce evidence of the possible advantages and disadvantages and also provide more insights to the challenges that may be associated with chronic care clinics that incorporate HIV. Due to limited evidence available for this policy option cautious planning is required in order to evaluate the effectiveness and cost-effectiveness of this option prior to any large-scale implementation.

**Equity, Costs, Monitoring and Evaluation**

We did not find evidence about equity, cost or cost effectiveness of implementing chronic care clinics that integrate several NCDs and HIV. An argument could be made that such a clinic could reduce stigma because they will be attended by both HIV infected and seronegative patients bringing together both cohorts, decreasing isolation of people living with HIV.

Monitoring and evaluation of equity, effectiveness and efficiency of these clinics may use the already existing tools or new tools may be developed to integrate all conditions in the Health Management Information Systems of chronic care clinics. In Cambodia there were no challenges described in data storage when they used the different information systems for
HIV and Non HIV patients. There is no evidence to provide insights to whether integrating the information systems would be a better approach.

**Policy option 4: The Addition of Hypertension Screening and Referral into Community-Based HIV Activities**

**Description and Rationale for Option 4**

This policy option lays out a public health approach to capture undiagnosed HIV infected hypertensive people in the community and link them to appropriate health services.

HIV and hypertension share similarities in case finding, initiation of treatment, follow up and retention to care. Both diseases can be screened for in health facilities and, importantly, can also be screened for within community settings. They also both rely on various community engagement and participation interventions in order to promote prevention and retention in care. In resource-limited settings, where health-seeking behavior may be poor and there is limited access to quality chronic disease management, community-based screening and referral to care may serve as an effective point of entry for care.

In this policy option, all HIV community based activities, including static and outreach HIV Testing and Counseling (HTC) sites as well as Malawi’s national HIV testing and counseling week would be used as a platform for opt-out hypertension screening. All community members who are found to be have elevated blood pressure would be referred to a facility that offers hypertension treatment and care.

This policy option is not mutually exclusive of the other three previously mentioned options. We consider this option as a possible addition to any of the other policy options mentioned above.

**The Current Application of Hypertension Screening and Referral in Community-Based Activities in Malawi**

Although the Malawi HIV programme has several community-based activities that have been successful in improving HIV testing rates and supporting linkages to care, these national HIV community-screening activities have not been integrated with hypertension or any other disease screening efforts. An example of a key activity is the national weeklong HTC campaign. During HTC week, HIV testing is offered to all people in their communities by mobile testing units. In addition, the Malawi Ministry of Health and partners have embarked on door-to-door HTC as well as moonlight testing in selected districts. These and other efforts have led to substantial increases in the number of patients tested for HIV in Malawi from approximately 96,000 in 2006 to approximately 2.2 million in 2013.

**Available Evidence on the Potential Impacts of Integrating Hypertension Screening and Referral in Community-Based HIV Activities**

A search using multiple key words and databases as well as correspondence with experts in the field yielded no systematic reviews that discussed outcomes of integrating hypertension screening and referral in community-based HIV activities. Given this, we have relied on individual studies as described below.
Acceptability of Approach
There is some evidence that an integrated community-based screening approach that combines hypertension and HIV screening and referral may be acceptable to community members.

Community-based screening for multiple NCDs, including hypertension, alongside HIV has been shown to be feasible in one study in Kenya. Within this study, home-based (door-to-door) integrated HIV, hypertension and diabetes testing was conducted among 236 participants. Another 346 participants were subjected to community-based screening for hypertension and diabetes only—no HIV testing was offered. Importantly, an informal survey of the counselors at the end of home-based screening revealed that participants who were initially reluctant to undergo HIV testing were more likely to be tested if they were offered screening for diabetes or hypertension at the same time. A study conducted in rural Uganda found that a five-day campaign reached 74% of adults in a community of 6,300 people with an integrated screening approach for multiple communicable and non-communicable diseases including hypertension, HIV, diabetes and malaria. 98% of participants underwent hypertension screening. The authors saw this campaign as highly feasible outreach option and an efficient use of health care resources. In a mobile testing unit intervention in Cape Town, South Africa, Govindasamy et al showed that almost 10,000 clients were screened for HIV, TB symptoms, diabetes and hypertension. This study showed that it was feasible to do mobile, community-based screening for hypertension. In addition, a study conducted in Uganda also showed high participation rates (65% of the total population in a rural community of approximately 3,500) in an integrated diabetes, hypertension and HIV community-based screening campaign. Participation rates were significantly higher in women (95%) than in men (52%).

In Malawi’s Neno District, hypertension screening has been undertaken at community HIV social support meetings. Despite the event being organized for people living with HIV, the attendance in these meetings were not only restricted to HIV clients. All adults over 25 years old were offered an HIV screening and were referred to care if they had elevated blood pressure. During the first 4 months, over 900 adults were screened with 12% found to have elevated blood pressure and referred to care.  

Active Case Finding
As mentioned above, there is some evidence that integrated community-based screening programs can actively find otherwise undiagnosed hypertensive community members. The Cape Town mobile unit intervention study showed an extremely high rate of elevated blood pressure with just over 58% of clients showing systolic blood pressure ≥140 mmHg. Pastakia et al found 6% of those who were screened in door-to-door testing were found to have elevated blood pressure (using a high systolic blood pressure ≥160 mmHg measure) with 10% found to be hypertensive in rural Kenya. Chamie et al found a much higher percentage, 28% had elevated blood pressure in Uganda. Of note this study used a lower systolic blood pressure ≥140 mmHg measure.

Linkages to Care
Chamie et al showed that linkages to care after an elevated blood pressure diagnoses were sub-optimal in Uganda. Among 422 adults with newly diagnosed hypertension, 59% accepted
referral appointments and of those 43% linked to care within three months. Of note, all hypertensive patients who accepted a referral were given a transport stipend.

With a limited sample size (35), Pastakia et al found that 31% linked to care in both the door-to-door and community screening programs in Kenya. In Cape Town 50% linked to a health facility for follow-up hypertension care within one-month. These studies shows that active case detection in the community can contribute to early hypertension treatment and care but promoting linkages to care must be a continual program focus.

**Equity, costs, monitoring and evaluation**

There is limited evidence on the equity of integrated community testing methods. Combining HIV and hypertension community screening may reduce stigma associated with HIV as community members will not be able to differentiate who has been referred for secondary management of hypertension or HIV care. It may also be argued that integration of hypertension screening during HIV activities will bring services closer to people, free of cost therefore accessible to financially disadvantaged community members. Furthermore, these testing campaigns are often undertaken in rural communities including ‘hard to reach areas’ as such making health services accessible to the disadvantaged population.

We did not find cost-effective analysis of integrated HIV and hypertension screening in communities. However, hypertension screening costs would likely be an incremental increase to the already planned HIV activities. Chanie et al suggest a reasonable low cost of adding diabetes and hypertension screening to community-based HIV testing campaigns ($2.41/person). Integrating community screening and referral of hypertensive and HIV infected patient into care may be an effective approach to improving the outcomes of hypertensive in people living with HIV. However, given the limitations of the available evidence, consideration should be given to rigorously evaluating the effectiveness and cost-effectiveness of this approach prior to or in conjunction with any scale up. Local barriers to linkage to care in Malawi need to be identified and strategies would need to be formulated that encourage successful linkage of referrals to facilities.
Implementation Considerations

The aforementioned policy options may improve the screening and treatment of hypertension among HIV infected patients. However, employing any one of these policy options would necessitate changes in other areas of the health system that must be examined and planned for. Implementation strategies can capitalize on enablers of these policy options to improve the screening and treatment of hypertension amongst HIV infected patients as well as addressing barriers to doing so. The focus here is primarily on barriers and potential strategies to address them.

Key enablers to improve the screening and treatment of hypertension amongst HIV infected patients include:

- Global recognition of the NCD epidemic in developing countries
- Emerging local evidence of the magnitude of the problem
- Well established HIV services at tertiary, district and primary-care levels
- Existing national guidelines for the management of chronic conditions including hypertension
- Inclusion of NCDs in Malawi’s essential health package
- The rapid progress of Malawi NCD program and emerging NCD policies

The above key enablers create a conducive environment for the implementation of the policy options noted above to improve the screening and treatment of hypertension among people living with HIV.

Evidence regarding barriers to improving the screening and treatment of hypertension amongst HIV infected patients and strategies to address these barriers are summarised in Table 1.
### Table 1. Key barriers to improving the screening and treatment of hypertension among HIV infected patients and strategies to address these barriers

#### Beneficiary Level

<table>
<thead>
<tr>
<th>Barrier</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>Hypertensive and other patients suffering from non-communicable chronic conditions may be hesitant to attend Chronic Care Clinic (CCC) services because of HIV stigma.</td>
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</table>

Issues of discrimination against people living with HIV are common in most countries including Malawi. Integration of HIV treatment together with other chronic conditions such as hypertension may result in discrimination against all people attending the CCC. There is limited evidence from Kenya that this may be the case as a recent study found that, while men’s comfort with receiving care at an integrated clinic, a proxy for perceived stigma, did not change, women were more likely to express discomfort after integration. However, the integration of HIV services into primary care services was associated with significant increases in patient satisfaction in certain domains, with no negative effect on satisfaction.

**Barrier is associated with Policy option # 3**

#### Strategies for addressing barrier

**To combat HIV-related stigma several approaches should be employed with specific target populations:**

1. Information-based approaches that concentrate on written information sharing and oral communication such as facility health talks, video etc.

2. Skill-building approaches such as training with healthcare workers or community leaders, drama etc.

3. Contact strategies that link people living with HIV and the general public and

4. Counselling/support for people living with HIV

#### Evidence

Stangl et al. describe considerable progress in stigma-reduction interventions in a recently conducted systematic review. This works builds upon Brown et al who conducted the first global review of interventions to reduce HIV-related stigma in 2003. Brown et al describe several interventions within each of these four approaches that have been shown to reduce stigma. However, the majority of this research is from developed countries. Brown noted that combining approaches 1 and 2 has been shown to be more effective then either alone and that combining 1 and 3 has been shown to increase tolerance and reduce stigma.
A study from Thailand showed that a locally adaptable community intervention that promoted interactions between HIV and non-HIV communities promoted tolerance and reduced stigma.\(^4\)6

Another study conducted in Chile showed that HIV peer educator programs can increase health workers’ knowledge about HIV, develop more infected and less stigmatizing attitudes, and lead to safer personal behaviours and more involvement in HIV prevention in the workplace and the community\(^4\)7

<table>
<thead>
<tr>
<th>Barrier</th>
<th>Evidence</th>
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</thead>
</table>
| Linkage to and retention in care | Evidence suggests that patients might be lost to follow up when referred after screening before linkage to care and after enrolled into care due to various factors including; proximity to health facility, financial constraints, and health service factors.\(^4\)8

**Barrier is associated with Policy option 2 & 4**

<table>
<thead>
<tr>
<th>Strategies for addressing barrier</th>
<th>Evidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>All newly diagnosed hypertensive patients should receive a comprehensive NCDs health education</td>
<td>In a study in Cambodia adherence support strategies including chronic disease counselling proved to be complementary, resulting in good outcomes (see above)(^3)7</td>
</tr>
</tbody>
</table>

<p>| Adherence counselling interventions must be routinely implemented in all services providing HIV and NCD care. | In a large ART service within a South African township, a peer counsellor system has contributed to comparatively low rates of mortality and loss to follow-up.(^4)9 |</p>
<table>
<thead>
<tr>
<th>Policy options</th>
<th>Implementation considerations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peer support programs should be introduced in routine care</td>
<td>Every attempt must be made by ART clinics to link their services with the community, and particularly with associations of people living with HIV/AIDS. In rural Malawi, care packages such as home treatment of opportunistic infections, support to family carers, referral of patients with adverse drug reactions, adherence counselling and defaulter tracing have been associated with better ART treatment outcomes.</td>
</tr>
<tr>
<td>SMS reminders and SMS health education messages could be considered</td>
<td>In a meta-analysis interventions including daily and weekly short message service (SMS; text message) messaging, calendars, peer supporters, alarms, counselling, improved adherence to treatment by 2 fold compared to standard of care.</td>
</tr>
<tr>
<td>Integrate HIV/NCD defaulters into the existing defaulter tracing programs</td>
<td>A study from Kenya showed that an active defaulter tracing system is feasible in a resource poor setting, solicits feedback from patients, retains a mobile population of patients in care, and reduces lost to follow up among HIV, PMTCT, and TB patients.</td>
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**Provider Level**

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<tr>
<th>Barrier</th>
<th>Strategies for addressing barrier</th>
<th>Evidence</th>
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<tbody>
<tr>
<td>Healthcare providers are not adequately trained and supervised to provide integrated hypertension-HIV services</td>
<td><strong>In-services training and mentorship for providers</strong>&lt;br&gt;All HIV providers would need to receive in-service training and mentorship in the screening and management of hypertension. All CCC staff should be trained on all chronic conditions including HIV care and management</td>
<td>Bluestone et al demonstrated that in-service training will remain a significant method in developing and maintaining skills and competencies required in public health and clinical setting.(^{54})&lt;br&gt;In the Cambodia model of HIV/NCD integration all consultations were carried out by medical staff who received training on the principles of chronic disease management and a patient-centred approach. A continuous training programme was organized for all staff to deal with newly appearing needs and problems, and to introduce new tools and guidelines.(^{37})</td>
</tr>
<tr>
<td><strong>Regular supervision, mentorship, audits and feedback</strong>&lt;br&gt;Regular supervision audits could improve skills and performance. The results of clinical audits and supervision could be fed back into health system improvements. Hypertension supervision and audits could be integrated into the existing well-developed HIV program audit and supervision program.</td>
<td><strong>Evidence</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Regular supervision, mentorship, audits and feedback</strong>&lt;br&gt;Regular supervision audits could improve skills and performance. The results of clinical audits and supervision could be fed back into health system improvements. Hypertension supervision and audits could be integrated into the existing well-developed HIV program audit and supervision program.</td>
<td>A study in Ethiopia demonstrated that using tools and approaches used for HIV to care for adults with diabetes improved the quality of care notably. Some of the adapted interventions used in the study were focused supportive, training materials, registers appointment books, charts, flow sheets, job aids supervision and mentoring of health workers which can similarly be applied in hypertension management. The same study shows that high quality supervision may be most effective in influencing performance, motivation and retention of community health workers.(^{19})</td>
<td></td>
</tr>
</tbody>
</table>
### Lack of motivation and high workload
Integration of HIV and other chronic diseases will result in an increased workload for health workers. Overworking might cause some workers to become demotivated which can subsequently affect the quality of care.

**Barrier is associated with all Policy Options (#1-#4)**

<table>
<thead>
<tr>
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<tbody>
<tr>
<td><strong>Retaining health care workers</strong>&lt;br&gt;The government and partners could further develop and implement retention strategies that can be locally adapted.</td>
<td>While motivational factors are undoubtedly country specific, financial incentives, career development and management issues are core factors for staff motivation. Nevertheless, financial incentives alone are not enough to motivate health workers. It is clear that recognition is highly influential in health worker motivation and that adequate resources and appropriate infrastructure can improve morale significantly.</td>
</tr>
<tr>
<td><strong>Provision of incentives</strong>&lt;br&gt;The provision of financial and non-financial incentives may promote retention of health care staff.</td>
<td>Reviews of literature have shown than incentives can play a role in motivating health workers. Financial incentives such as allowances and salary were found to be important in motivating health workers to comply to standard policies and guidelines. Non-financial incentives such as education and career development, good management skills by the hospital or clinic managers, appraisals, improved hospital infrastructure and availability of resources were found to motivate health workers.</td>
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</table>
Health System Constraints

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<tr>
<th>Barrier</th>
<th>Limited financial resources to increase screening and treatment of hypertension and other NCD’s</th>
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<tbody>
<tr>
<td></td>
<td>Funding for Malawi’s non communicable diseases is limited.</td>
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<td></td>
<td>Barrier is associated with all Policy Options (#1-#4)</td>
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</table>

<table>
<thead>
<tr>
<th>Strategies for addressing barrier</th>
<th>Evidence</th>
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<tbody>
<tr>
<td>Integrating hypertension care with well-funded vertical programs</td>
<td>Even if evidence is limited on large scale funding integration across chronic diseases including HIV, it has been shown in an African setting that adding an NCD screening and referral to care to HIV testing campaign is feasible and reasonably cost-effective. The already existing structures and investment in HIV services in Malawi would potentially leverage for integrated hypertension screening and management.18</td>
</tr>
<tr>
<td>Expanding the scope of recognizing the overlap between HIV and NCDs in order to enable resources to be geared including from the private sector</td>
<td>A large HIV treatment programme (N~50,000) in Western Kenya reported dual screening for hypertension as well as cardiovascular risk factor (anthropometric measurements) during a clinical encounter by a trained nurse. Funding came from the private-sector and allowed them to treat NCDs found to have high burden among patients with HIV.10</td>
</tr>
<tr>
<td>Support increased funding for NCD activities</td>
<td>Guidance from the WHO’s plan for the global strategy for the prevention and control of NCDs pushes countries to position chronic diseases in their development agenda and increase mobilisation of resources – financial, human and technical is key to WHO plan for the global strategy for the prevention and control of NCDs57</td>
</tr>
</tbody>
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## Inadequate infrastructure

Integration of HIV and hypertension may result in an increase in the number of patients attending clinics and thus necessitate an increase for clinic space.

*Barrier is associated with Policy Options #1, 2 and #3*

<table>
<thead>
<tr>
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<th>Evidence</th>
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<tbody>
<tr>
<td><strong>Construction or extension of available clinics to increase space</strong></td>
<td>A pilot project in Kenya integrating screening and treatment for NCD into HIV services found that infrastructure was a key challenge especially in services that required a private space. Anecdotal reports from urban primary health care facilities in South Africa and Zambia noted that as numbers of patients on ART increased or as ART services were integrated into primary care outpatient services, additional infrastructure was required.</td>
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## Well established communicable disease departments may be hesitant to include broader health services including NCD care

Highly effective vertical programs may be hesitant to integrate because of fear of reversing their hard fought programmatic gains.

*Barrier is associated with all Policy Options (1-4)*

<table>
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<tr>
<th>Strategies for addressing barrier</th>
<th>Evidence</th>
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</thead>
<tbody>
<tr>
<td><strong>Involvement of communicable and non-communicable disease departments during the initial stages of policy refinement</strong></td>
<td>Multiple organisations like Canadian institute for health research are promoting the use of integrated knowledge translation that promotes early involvement of all stakeholders in the development of research and policy. De Quincy et al have put a forward a model that promotes an integrated health policy development process that includes involving all stakeholders in the early stages of policy development.</td>
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### Stakeholders/Donor Constraint

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<th>Evidence</th>
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<tbody>
<tr>
<td><strong>Donor driven disease specific funding results in inequality in resource allocation.</strong></td>
<td><strong>Barrier is associated with all policy options (1-4)</strong></td>
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<tr>
<td>In most low and middle income countries such as Malawi funding is often disease specific and heavily weighted to communicable diseases</td>
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#### Strategies for addressing barrier

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<th>Evidence</th>
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<tbody>
<tr>
<td>A study in Uganda concluded that there is a need of ensuring that external donor funds should be aligned with the countries priorities. The funds should not be provided as short term, project based for supporting disease specific activities e.g. for HIV/AIDS only.</td>
</tr>
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</table>

#### Next Steps

The aim of this policy brief is to foster dialogue and judgements that are informed by the best available evidence. The intention is not to advocate specific options or close off discussion. Further actions will flow from the deliberations that the policy brief is intended to inform. These might include:

- The need for further research on each of these policy options. Pilot programs have been developed within several non-governmental organizations in Malawi including DREAM, Lighthouse Trust, Dignitas International and Partners in Health, that include at least one pilot of each of the four policy options described within this brief. A coordinated effort should be made to align these pilot program’s indicators to allow for easy and meaningful comparisons on patient outcomes, cost-effectiveness and unintended consequences.
- Development of clear guidance or policy on hypertension screening and treatment of HIV infected patients.
Appendices

Appendix 1. How this policy brief was prepared

The methods used to prepare this policy brief are described in detail elsewhere.\textsuperscript{64-66}

The problem that the policy brief addresses was clarified through an iterative discussion among authors, the HIV-HTN Community of Practice, review of relevant documents and research and consultation with key informant. Research describing the problem, the size of the problem and underlying causes was identified by local reports, key informants and government document.

Strategies used to identify potential options to address the problem included review of global evidence and its local applicability, considering systematic reviews, relevant single studies and grey literature. In addition we talked to key informant and carried out brainstorming session.

We searched electronic databases such as PubMed, Cochraine and Health System Evidence using index terms or free text. For the full articles for the citations identified, we used HINARI to access the relevant full documents. We also used Google Scholar, government documents and national reports.

We supplemented these searches by directly communicating with the authors to find other relevant documents and recent publications or unpublished documents.

Potential barriers to implementing the policy options were identified through discussions with the aforementioned stakeholders.

Drafts of each section of the report were discussed with all authors and external reviews of sections was completed by several key stakeholders. A list of the people who provided comments or contributed to this policy brief in other ways is provided in the acknowledgements.
Hypertension: A condition in which the pressure in the blood vessels is persistently raised. Blood pressure is the force of blood against the walls of blood vessels (arteries) as it is pumped by the heart. As pressure raises it becomes harder for the heart to pump the blood. Normal blood pressure is defined as 120mm Hg (systolic) and 80mm Hg when the heart relaxes (diastolic), or 120/80. When blood pressure is equal or above 140/90 the pressure is considered to be raised or high. We have used 140/90 mmHg measured at rest on more than two occasions, irrespective of the time between measurements, Otherwise the term elevated blood pressure is used. Hypertension -

Elevated blood pressure: All blood pressure readings that were classified as elevated by study authors. When this term is used we noted the classification scheme used by the study author.

Non-communicable diseases: Is a classification of four main disease groups, cardiovascular, cancers, chronic respiratory disease and diabetes. These diseases are also known as chronic diseases and are not passed from person to person.
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