THE USE OF LAY COUNSELLORS FOR THE PREVENTION OF MOTHER-TO-CHILD TRANSMISSION OF HIV: A CASE STUDY OF BOTSWANA’S NATIONAL PMTCT PROGRAMME

by
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BHSc, McMaster University 2006

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ABSTRACT

Through the successful implementation of prevention of mother-to-child transmission of HIV (PMTCT) interventions, paediatric AIDS has been largely eliminated in high-income countries. A number of factors, however, continue to impede the scale-up of PMTCT programmes in many Sub-Saharan African countries. One of the largest barriers to the scale-up of PMTCT programmes is the shortage of trained health workers. The health workforce crisis is contributing to the on-going high child mortality rates due to AIDS in Southern Africa despite the fact that there are affordable prevention mechanisms available. Innovative solutions are needed. This paper explores the implementation of one type of human resource intervention in Botswana’s national PMTCT programme aimed at addressing health worker shortages in order to scale-up PMTCT coverage and access – the Lay Counsellor. Botswana’s experience provides a potentially useful model for other countries in the region facing similar HIV epidemics in the context of health professional shortages.

Keywords: HIV/AIDS; PMTCT; prevention programme; lay counsellors; task-shifting; high-burden countries; Botswana

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## Glossary

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AIDS</td>
<td>Acquired Immune Deficiency Syndrome</td>
</tr>
<tr>
<td>ANC</td>
<td>Antenatal care</td>
</tr>
<tr>
<td>ART</td>
<td>Antiretroviral therapy</td>
</tr>
<tr>
<td>ARV</td>
<td>Antiretroviral</td>
</tr>
<tr>
<td>AZT</td>
<td>Zidovudine</td>
</tr>
<tr>
<td>BOTUSA</td>
<td>Botswana/USA Health Partnership</td>
</tr>
<tr>
<td>CD4</td>
<td>Helper T-lymphocytes. Immune cells targeted by HIV virus</td>
</tr>
<tr>
<td>GNP</td>
<td>Gross national product</td>
</tr>
<tr>
<td>HAART</td>
<td>Highly active antiretroviral therapy</td>
</tr>
<tr>
<td>HHR</td>
<td>Health human resources</td>
</tr>
<tr>
<td>HIV IATT</td>
<td>Human Immune Deficiency Virus</td>
</tr>
<tr>
<td>IATT</td>
<td>Interagency Task Team on prevention of HIV infection in pregnant women, mothers and their children</td>
</tr>
<tr>
<td>LC</td>
<td>Lay Counsellor</td>
</tr>
<tr>
<td>LMIC</td>
<td>Low-middle income country</td>
</tr>
<tr>
<td>MCH</td>
<td>Maternal and child health</td>
</tr>
<tr>
<td>MDG</td>
<td>Millennium Development Goal</td>
</tr>
<tr>
<td>MOH</td>
<td>Ministry of Health</td>
</tr>
<tr>
<td>MTCT</td>
<td>Mother-to-child transmission</td>
</tr>
<tr>
<td>NGO</td>
<td>Non-governmental organization</td>
</tr>
<tr>
<td>NVP</td>
<td>Nevirapine</td>
</tr>
<tr>
<td>PMTCT</td>
<td>Prevention of mother-to-child transmission</td>
</tr>
<tr>
<td>PPP</td>
<td>Purchasing Power Parity</td>
</tr>
<tr>
<td>Pula</td>
<td>Botswana’s official currency</td>
</tr>
<tr>
<td>SIDA</td>
<td>Swedish International Development Agency</td>
</tr>
<tr>
<td>UN</td>
<td>United Nations</td>
</tr>
<tr>
<td>UNAIDS</td>
<td>Joint United Nations Programme on HIV/AIDS</td>
</tr>
<tr>
<td>UNGASS</td>
<td>United Nations General Assembly Special Session on HIV/AIDS</td>
</tr>
<tr>
<td>USD</td>
<td>United States dollars</td>
</tr>
<tr>
<td>WHO</td>
<td>World Health Organization</td>
</tr>
</tbody>
</table>
INTRODUCTION

Acquired immune deficiency syndrome (AIDS) is not just an adult’s disease. Every seventh person who dies of AIDS is in fact a child under the age of 15 (WHO, 2006a). In 2007, over 800 children under the age of 15 died each day from AIDS and over 1100 children were newly infected with HIV. In total, approximately 420,000 children under 15 were newly infected in 2007 and nearly 300,000 children died from AIDS. There are currently estimated to be over 2.1 million children in the world living with HIV/AIDS, according to the most recent United Nations (UN) estimates (UNAIDS/WHO, 2007).

Table 1: Recent global trends in paediatric HIV/AIDS

<table>
<thead>
<tr>
<th>Year</th>
<th>Total number of HIV-infected children</th>
<th>Number of new HIV-infections in children under 15</th>
<th>Number of child AIDS deaths</th>
</tr>
</thead>
<tbody>
<tr>
<td>2001</td>
<td>1.5 million</td>
<td>460,000</td>
<td>330,000</td>
</tr>
<tr>
<td>2007</td>
<td>2.1 million</td>
<td>420,000</td>
<td>290,000</td>
</tr>
</tbody>
</table>

Source: UNAIDS/WHO, 2007

Paediatric HIV/AIDS is most devastating in Sub-Saharan Africa, where about 1.9 million, or 90%, of the world’s HIV-positive children currently live (UNAIDS/WHO, 2007). In 2005, AIDS caused 6% of deaths in children-under-5 in this region (WHO, 2006a). In some high-burden countries in Southern Africa

1 Corrections to HIV estimates for children are reported at http://www.unaids.org/en/KnowledgeCentre/HIVData/EpiUpdate/EpiUpdArchive/2007/
(adult prevalence rate of more than 15%), AIDS is the underlying cause in over 33% of deaths in children-under-5 (WHO, 2006a; WHOSIS, 2007) (see Table 2).

Table 2: Select HIV/AIDS statistics for eight high-burden countries

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Botswana</td>
<td>53.8</td>
<td>23.6*</td>
<td>140 000</td>
</tr>
<tr>
<td>Lesotho</td>
<td>56.2</td>
<td>22.7*</td>
<td>150 000</td>
</tr>
<tr>
<td>Mozambique</td>
<td>12.9</td>
<td>14.4**</td>
<td>960 000</td>
</tr>
<tr>
<td>Namibia</td>
<td>53.0</td>
<td>17.7*</td>
<td>130 000</td>
</tr>
<tr>
<td>South Africa</td>
<td>57.1</td>
<td>16.6*</td>
<td>3 100 000</td>
</tr>
<tr>
<td>Swaziland</td>
<td>47.0</td>
<td>26.0**</td>
<td>120 000</td>
</tr>
<tr>
<td>Zambia</td>
<td>16.1</td>
<td>15.8*</td>
<td>570 000</td>
</tr>
<tr>
<td>Zimbabwe</td>
<td>40.6</td>
<td>18.0 **</td>
<td>890 000</td>
</tr>
</tbody>
</table>


Globally, mother-to-child transmission (MTCT), or vertical transmission, is the mode of transmission in 90% of HIV infections in children-under-15 (MSF, 2005). The figure is even higher, at 95 %, in Sub-Saharan Africa (WHO, 2006a). In the absence of preventive measures, the risk of MTCT of HIV during pregnancy and labour/delivery is between 15 and 25 %. The risk increases to 30-45% when the infant is breastfed until the age of 18-24 months (WHO, 2006a). Infected infants develop AIDS much more quickly than adults and between one quarter and one third of vertically infected infants die before the age of one (WHO, 2006a).

Through the successful implementation of PMTCT interventions, paediatric AIDS has been largely eliminated in high-income countries (Luo et al,
2007). A number of factors, however, continue to impede the scale-up\(^2\) of PMTCT programmes in Sub-Saharan African countries including those countries in most need (see Table 2). One of the largest barriers to the scale-up of PMTCT programmes (and HIV/AIDS programmes in general) is the dire shortage of trained health workers (Samb et al, 2007; Global Partners Forum, 2007; Doherty et al, 2005; Schneider et al, 2006; Gerein et al, 2006). Participants at the PMTCT High-Level Global Partners Forum\(^3\) in South Africa, November 2007, stressed that “innovative solutions to address the shortage of HIV/AIDS service workforce are important, especially in resource-limited and high disease burden settings” (Global Partners Forum, 2007, p. 18). There are on-going high mortality rates in children due to AIDS in the HIV high burden countries of Southern Africa despite the fact that affordable prevention mechanisms are available. Solutions to the health workforce crisis are needed. This paper explores the implementation of one type of human resource intervention in HIV high-burden Southern African countries aimed at addressing health worker shortages in order to scale-up PMTCT coverage and access – the Lay/Community Counsellor.

\(^2\)‘Scaling up’ is defined by the WHO as "the activity of expanding an intervention or programme from initial facilities that serve a small proportion of the population to facilities that serve a significantly larger population (such as an entire region or country)" (WHO, 2004, p. 3).

\(^3\)The Prevention of Mother-to-Child Transmission High Level Global Partners Forum has taken place twice (in Nigeria, 2005 and in South Africa, 2007). The two-day meetings were convened by the WHO, UNICEF and IATT, and involved the IATT member agencies and representatives from national governments and PMTCT implementing organizations. The main objectives of the meetings: to document global progress on PMTCT; to review and share lessons learned; to identify gaps and challenges; to present a guiding document for the scale-up of PMTCT; and to secure endorsement of the guidance.
BACKGROUND AND RATIONALE

The Global PMTCT Agenda: goals and targets

The international community has officially recognized that the mother-to-child transmission of HIV is “tragic” and has called for its prevention to be prioritized (UNGASS, 2001, p. 2). The achievement of two of the Millennium Development Goals depends directly on the success of interventions aimed at the prevention of mother-to-child transmission of HIV: reduce child mortality; and combat HIV and other infectious diseases (United Nations, 2008). The declaration of the United Nations General Assembly Special Session on HIV/AIDS (UNGASS) further attests to the global political commitment to prevent HIV infection in children. Resolution 54 of the declaration, adopted in 2001, called for a reduction of the proportion of infants infected with HIV by 20 % by 2005, and is aimed at a reduction of 50 % by 2010 (UNGASS, 2001). The ultimate goal set out by the Interagency Task Team on Prevention of HIV Infection in Pregnant Women, Mothers and their Children is to eliminate paediatric HIV by 2015 (UNAIDS/WHO/IATT, 2007).

PMTCT Standard of Care and Coverage in Sub-Saharan Africa

Vertical (mother-to-child) transmission of HIV can take place during three stages: during pregnancy, during labour and delivery, or during the postpartum period through breastfeeding. The likelihood of transmission varies by stage and
the smallest percentage of infants is infected during pregnancy (in utero). In non-breastfeeding populations, about two thirds of MTCT takes place during labour and delivery. Over one third of all MTCT in breastfeeding populations occurs during the breastfeeding period (Vieira, 2003).

Vertically acquired paediatric HIV/AIDS is a preventable disease. The implementation of evidence-based interventions can reduce the risk of vertical transmission to less than 2% (IATT, 2007a). The UN recommends a four-element comprehensive strategy in order to prevent HIV infection in infants and young children. This strategy involves not only the prevention of vertical transmission, but also primary prevention of HIV in women of childbearing age, prevention of unintended pregnancy in HIV-infected women, and provision of treatment, care and support for HIV-infected women and their families (IATT, 2007a). The specific focus of this study is on the components of intervention programmes aimed at reducing transmission from HIV-infected pregnant and lactating women to their infants – intervention components delivered primarily in a clinical, antenatal care (ANC) setting. The importance of the comprehensive strategy, and the interrelatedness of all four elements, is recognized.

The core components of a PMTCT programme in low-resource settings are HIV counselling and testing, antiretroviral prophylaxis (short-course Zidovudine (AZT) and/or single-dose Nevirapine (NVP) for mother and infant), modified obstetric practices geared towards safe labour delivery, HIV and infant feeding counselling and support, and the promotion of male involvement and support (Rutenberg et al, 2003). According to WHO recommendations, these
interventions should be integrated into maternal, newborn and child health services (UNAIDS/WHO/IATT, 2007). These interventions work to reduce HIV infection in infants either directly or indirectly. Infant exposure to the HIV virus is directly reduced through the provision of antiretroviral prophylaxis along with exclusive replacement feeding or exclusive breastfeeding (Rutenberg et al., 2003). Male partner involvement in PMTCT programmes increases pregnant women’s uptake of programme services and information (Rutenberg et al., 2003). Finally, HIV testing and counselling is important for “raising of HIV status, promoting behaviour change, and diagnosis HIV infection” (Heymann, 2004, p. 6). The identification of HIV-positive pregnant women through counselling and testing is the entry point for the enrolment of women into a PMTCT programme. In order to enhance the uptake of PMTCT services, the WHO recommends the institutionalization of provider-initiated HIV counselling and testing in all antenatal, childbirth, postpartum and paediatric care settings in generalized epidemic settings (WHO/UNICEF/IATT, 2007).

UNICEF data show that a growing number of low- and middle income countries are scaling-up PMTCT programmes at the national level (Luo et al., 2007). However, Sub-Saharan Africa, the region with the highest burden of HIV, still has the lowest level of PMTCT coverage. Approximately 12 % of health facilities in East and West Africa that provide ANC, and 38% in East and

\[4\] WHO recommendations for infant feeding vary according to a woman’s individual circumstances. Exclusive breastfeeding is recommended for the first 6 months of life when formula feeding is not deemed “acceptable, feasible, affordable, sustainable, and safe” (Prendergast et al., 2007, p.68-69). Early mixed feeding (before 6 months) poses a greater risk of HIV transmission compared with exclusive breastfeeding from birth (Coovadia et al., 2007).
Southern Africa, also provide a minimum package of PMTCT services (IATT, 2007a).

In 2005, estimates showed that the percentage of HIV-positive pregnant women receiving ARVs for PMTCT was 3% in West and Central Africa, and 14% in East and Southern Africa (Luo et al, 2007). These numbers reflect great progress (an increase from 1% and 9% respectively since 2004). They also show, however, that at least 86-97% of women in need did not have access to these services in 2005. Only seven of 71 LMICs included in the study provided at least 40% of HIV-positive pregnant women with ARVs for PMTCT in 2005. Botswana was the only one of these (at 54% coverage) in Africa in 2005 (Luo, 2007). These ARV coverage levels lag far behind the 2005 coverage targets proposed by UNGASS (UNGASS, 2001). In 2006, Namibia, South Africa, and Swaziland joined the list (of now 17 countries) of LMICs providing at least 40% of HIV positive pregnant women with ARVs (IATT, 2007a). PMTCT coverage levels (2005/06) in the eight highest disease-burden countries are presented in Table 3.

Table 3. PMTCT coverage in high-burden Southern African countries

<table>
<thead>
<tr>
<th>Country</th>
<th>Antenatal care coverage (%), 1997-2005</th>
<th>Pregnant women who received an HIV test (%), 200</th>
<th>Estimated # of HIV+ pregnant women, 2005</th>
<th>Estimated % of HIV+ pregnant women who received ARVs for PMTCT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Botswana</td>
<td>97</td>
<td>95</td>
<td>14 000</td>
<td>54 (2005)</td>
</tr>
<tr>
<td>Lesotho</td>
<td>90</td>
<td>11</td>
<td>15 000</td>
<td>12 (2005)</td>
</tr>
<tr>
<td>Mozambique</td>
<td>85</td>
<td>13</td>
<td>150 000</td>
<td>6 (2005)</td>
</tr>
<tr>
<td>Namibia</td>
<td>91</td>
<td>49</td>
<td>14 000</td>
<td>&gt;40 (2006)</td>
</tr>
<tr>
<td>South Africa</td>
<td>92</td>
<td>47</td>
<td>250 000</td>
<td>&gt;40 (2006)</td>
</tr>
<tr>
<td>Swaziland</td>
<td>90</td>
<td>47</td>
<td>14 000</td>
<td>&gt;40 (2006)</td>
</tr>
<tr>
<td>Zambia</td>
<td>93</td>
<td>15</td>
<td>97 000</td>
<td>15 (2005)</td>
</tr>
<tr>
<td>Zimbabwe</td>
<td>93</td>
<td>28</td>
<td>98 000</td>
<td>9 (2005)</td>
</tr>
</tbody>
</table>

Source: Adapted from (IATT, 2007a; IATT, 2007b)
Barriers to PMTCT Scale-up and Universal Coverage

A number of barriers have reportedly contributed to inadequate levels of PMTCT coverage and uptake in Sub-Saharan Africa. These include both demand- and supply-side barriers. These barriers include: reluctance of women to be tested for HIV; incomplete follow-up of participants; non-disclosure of HIV status; difficulties with infant feeding among HIV positive women (Nugwagaba-Biribonwoha et al, 2007); a gap between knowledge about the benefit and acceptance of having an HIV test; lack of male partner involvement (Bajunirwe & Muzoor, 2005); stigma; weak community mobilisation (Druce & Nolan, 2007); and patient attrition and non-adherence (Stringer et al, 2003). The procurement and distribution of necessary supplies essential for the provision of PMTCT services (i.e. test kits, drugs, formula, etc) also pose a barrier to increased coverage (Doherty et al, 2005; Sripipatana et al, 2007; Stringer et al, 2003).

One of the greatest underlying barriers to the scale-up of PMTCT services is the shortage and maldistribution of health human resources (Druce & Nolan, 2007; Schneider et al, 2006; Luo et al, 2007). Providing PMTCT services requires considerable human resources capacity. The integration of PMTCT interventions into maternal, newborn and child health services, and other sexual and reproductive health care, is time-intensive and puts further strain on already overstretched human resources in under-staffed clinics (Gerein et al, 2006). Many countries in Sub-Saharan Africa are experiencing a critical shortage of health care workers and do not have enough health human resources (HHR) for effective health system operation (WHO, 2007). According to WHO estimates,
the WHO African Region is short of 817,992 physicians, nurses and midwives
(WHO, 2007). Rural areas are especially underserved (Dussault & Franceschini,
2006). Shortages of health care staff decrease the availability of and access to
maternal health services, and reduce the quality of services provided (Gerein et
al, 2006).

<table>
<thead>
<tr>
<th>Country</th>
<th>Number of physicians per 100,000 pop.</th>
<th>Number of nurses per 100,000 pop.</th>
</tr>
</thead>
</table>

Source: WHOSIS, 2007

A variety of strategies have been attempted to increase the number of
trained health workers available for the scale-up PMTCT. These include: paying
off-duty nurse midwives overtime to undertake counselling duties in Zambia (Chi
et al, 2005); providing incentives, such as improved housing, to health care
workers stationed in rural areas in Malawi (MSF, 2007); training traditional birth
attendants in the provision of some PMTCT services in Cameroon (Welty et al,
2005); publically supporting the transfer of patients from the public to the private
sector to receive ART in Botswana (Dreesch et al., 2007); training new cadres of workers to take over duties such as HIV testing and counselling in countries like Botswana, Namibia (Dreesch et al., 2007; McCourt & Awases, 2007). This list is far from exhaustive but it illustrates to some extent the array of strategies that have been adopted in different settings.

One strategy viewed as having great deal of potential is the employment of new cadres of less-trained health workers to supplement dwindling supplies of health human resources. Dovlo (2004) identifies and describes the education, regulation, scopes of practice, specialization, nomenclature, retention and cost-effectiveness of substitute health workers in African countries. Substitute health workers are defined as “health cadres who have been trained for shorter periods and required lower entry level educational qualifications, to who are delegated functions and tasks normally performed by more established health professionals with higher qualifications” (Dovlo, 2004, p. 3). He concludes that substitution is a cost-effective way of increasing the supply of skilled health workers in countries and in rural areas in particular. The review focuses primarily on physician substitutes, but also refers to “task delegation” as one of the four main forms of substitution taking place in Africa (Dovlo, 2004).

Task delegation or “task shifting” is posited to be one of the best ways of expanding the health workforce in response to the HIV epidemic (Samb et al., 2007; WHO, 2007; WHO/PEPFAR/UNAIDS, 2007). Task shifting, or task substitution, refers to the delegation of some tasks from more to less specialized (less educated) health workers. This can include the shifting of some health care
duties, when appropriate, to persons with little or no formal medical training (Samb et al, 2007). Task shifting is meant to improve efficiency while increasing the number of deployable, trained health workers, and creating local jobs (WHO, 2007). Samb et al. (2007) reviews the history of task shifting both within and outside of the realm of HIV services and reports that there is evidence that this could be an effective way to scale-up HIV-prevention, care and treatment (Samb et al, 2007). They conclude that “sufficient data are already available to support the prompt scale-up of HIV-prevention, care and treatment through task shifting” (Samb et al, 2007, p. 2513). The WHO task shifting model specifically promotes shifting some HIV-related duties usually performed by nurses to nursing assistants and/or community health workers – whose approximate training period can be as short as one week, which is much shorter than the time required to train a nurse (WHO, 2007).

**Employing Lay Counsellors for PMTCT in High-Burden Settings**

HIV counselling and testing is an element of PMTCT of HIV that lends itself well to task shifting from nurses to community health workers. Viral testing and counselling, the entry point of a PMTCT programme, is a particularly time-consuming activity for health care workers in antenatal clinics and is often impeded by staff shortages (Rutenberg et al, 2003). For example, a study in Zambia found that the average time required for individual pre- and post-testing counselling in an ANC setting was 30 minutes and was as high as 27 minutes for pre-test counselling alone in some clinics (Huddart et al, 2004). Besides being time-consuming, the additional counselling and support recommended for HIV-
positive women can be emotionally straining and tiring (Nuwagaba-Biribonwoha et al, 2007). Pre- and post-test counselling and testing are essential services related to PMTCT, because "they provide women with information and support to make subsequent decisions about antiretroviral therapy and infant feeding" (Rutenberg et al, 2003). Insufficient pre-test counselling time is one of the main reasons for ongoing low uptake of HIV testing in ANC settings and other PMTCT services (Rutenberg et al, 2003). A study that took place in antenatal clinics and a maternity ward in Botswana found that 82% of pregnant and postnatal women surveyed reported to be more inclined to have an HIV test said after having pre-test counselling (Creek et al, 2007a).

The Global Partners Forum reports that the use of lay counsellors, a specialized, sub-type of community health worker⁵, has been found to be one of the key characteristics associated with successful scale-up of PMTCT programmes in high-burden countries:

"The use of lay counselors is an innovative solution to the shortage of health care workers in high-burden countries, which has been shown to alleviate the workload of health-care providers, to achieve good HIV testing rates and increase coverage of PMTCT programmes" (UNICEF/WHO/IATT, 2007, p. 10).

Lay counsellors are a non-professional cadre of workers trained and employed (voluntarily or paid) to provide HIV-related counselling and testing services (Rutenberg et al, 2003). There is not one standardized title for this cadre and

⁵ Community health workers are defined as "any health worker carrying out functions related to health service delivery; trained in some way in the context of the intervention; and having no formal professional or paraprofessional certificated or degreeed tertiary education" (Lewin et al, 2005 in Lehmann & Sanders, 2007).
they are also known by other names such as community counsellors, peer counsellors, and primary care counsellors (Ncube et al, 2006; Lehmann & Sanders, 2007). A recent study of South Africa's national pilot PMTCT programme found that the availability of lay counsellors was a contributing factor to high HIV testing uptake rates in antenatal clinics. In 2000, pilot PMTCT programmes that used lay counsellors to carry out testing and counselling duties were found to have the smallest drop off between first antenatal visit and women accepting HIV testing (Doherty et al, 2004). Another pilot study in urban Zimbabwe found that pre- and post-test HIV counselling and testing of pregnant women by lay community volunteers in ANC clinics is “feasible, effective, and acceptable by both clinic staff and clients” (Shetty et al, 2005, p. 757) – a finding similar to those reported by other studies in Sub-Saharan Africa (Shetty et al, 2005).

In 2007, the WHO published a report that reviews the state of the evidence, activities, costs and impact on health outcomes of using community health workers entitled “Community health workers: What do we know about them?” (Lehmann & Sanders, 2007). One of the main objectives of this desk review was “to identify gaps in knowledge and evidence on the use of CHWs to deliver basic health care services” (Lehmann & Sanders, 2007, p. 1). The review reveals that the use of CHWs in HIV/AIDS prevention and care is “one of the fastest-developing areas” of CHW use and that CHWs are being “widely used as lay counselors” (Lehmann & Sanders, 2007, p. 13). However, it is further
reported that lay personnel are often unregulated and their use in HIV/AIDS programmes has not yet been well documented (Lehmann & Sanders, 2007).

The purpose of the present study is to explore this innovative way in which new cadres of health workers in Southern Africa are being used to improve PMTCT coverage and uptake in public health systems. This paper specifically attempts to help fill the gap in evidence by documenting the history and current use of lay/community counsellors in the national PMTCT programme of an HIV high-burden country – Botswana.
METHODS

Using a case study approach, this paper presents an overview of how lay counsellors are currently being used to support the delivery of PMTCT services in a public healthcare system and discusses programmatic successes and challenges faced. The documentation of Botswana’s experience can provide useful lessons for other countries facing similar HIV epidemics as they struggle to expand the coverage of PMTCT services in the context of health human resources shortages.

Government policies and documents related to the delivery of PMTCT services, relevant non-governmental organization (NGO) documents, and publications on the use of lay/community counsellors were reviewed. I performed PubMed and “Google” searches for relevant publications and documents using the search words “HIV”, PMTCT, “mother-to-child-transmission”, “lay counsellor/counselor”, “community health worker”, and “Botswana” on its own and as a qualifier for the other terms. I also searched the reference lists of topical papers. I searched the respective websites of Botswana’s Ministry of Health and the National AIDS Coordinating Agency for related policy and programmatic documents. Finally, I requested information by email from organizations involved in HIV prevention efforts on the ground in Botswana.
CASE STUDY - BOTSWANA

Table 5: Country and HIV epidemic background data

<table>
<thead>
<tr>
<th>Capital</th>
<th>Gaborone</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Population</strong></td>
<td>1 765 000 (2005)</td>
</tr>
<tr>
<td><strong>Urban, Rural population (%)</strong></td>
<td>53.47 (2005)</td>
</tr>
<tr>
<td><strong>GNP per capita (PPP Int’l $)</strong></td>
<td>10 250 (2005)</td>
</tr>
<tr>
<td><strong>% of population living on &lt;1$/day</strong></td>
<td>24 (1994-2004)</td>
</tr>
<tr>
<td><strong>GINI Coefficient</strong></td>
<td>60.1 (2007)</td>
</tr>
<tr>
<td><strong>Total health expenditure per capita</strong></td>
<td>375 (2003)</td>
</tr>
<tr>
<td><strong>Life expectancy at birth</strong></td>
<td>~36-40 (2004)</td>
</tr>
<tr>
<td><strong>Total fertility rate</strong></td>
<td>3 (2004)</td>
</tr>
<tr>
<td><strong>Infant mortality rate (per 1000 live births)</strong></td>
<td>87 (2005)</td>
</tr>
<tr>
<td><strong>Maternal mortality ratio (per 100000 live births)</strong></td>
<td>100 (2000)</td>
</tr>
<tr>
<td><strong>Adult HIV prevalence rate</strong></td>
<td>23.6 (2005)</td>
</tr>
<tr>
<td><strong>Number of HIV-positive women (15+)</strong></td>
<td>140 000 (2005)</td>
</tr>
<tr>
<td><strong>Number of HIV-positive men (15+)</strong></td>
<td>120 000 (2005)</td>
</tr>
<tr>
<td><strong>HIV prevalence in pregnant women attending ANC</strong></td>
<td>32 (2006)</td>
</tr>
<tr>
<td><strong>Number of HIV-positive children</strong></td>
<td>14 000 (2005)</td>
</tr>
<tr>
<td><strong>Percent of under-5 deaths due to HIV/AIDS</strong></td>
<td>53.8 (2000)</td>
</tr>
</tbody>
</table>


Country Background

Botswana, an upper middle income country according to World Bank classification, is a politically stable country and has one of the strongest economies in Africa. It also has one of the highest Gini coefficients in the world (60.1) indicating a very high degree of inequality of income or expenditure (UNDP, 2007).
Botswana currently has the second highest adult HIV prevalence rate in the world at 23% (second only to Swaziland) (UNAIDS/WHO, 2007). Approximately 33.4% of pregnant women in Botswana are HIV-positive (Creek et al, 2008). In 2005, there were an estimated 14 000 HIV positive pregnant women living in the country (IATT, 2007b), and in 2000, over 50% of all deaths in children-under-five were attributable to HIV/AIDS (WHOSIS, 2007).

Health care is provided for citizens by the public sector and although there is also private health care available, the majority of Batswana depend on publically provided services for their healthcare needs (WHO, 2003). According to the WHO, about 90% of the population lives within 15 km of a public health facility. Botswana’s public health care system is made up of a network of hospitals, clinics, health posts and mobile stops (WHO, 2003). It is estimated that 99% of pregnant women receive at least one antenatal care visit and 97% receive at least 4 visits (WHO, 2006b). Ninety-four percent of deliveries are attended by a skilled attendant (WHO, 2006b).

Like most countries in Sub-Saharan Africa, Botswana does not have enough health professionals in the public sector for adequate health services delivery. Botswana does not have a medical school and relies heavily on importing both generalist and specialist physicians from abroad (Dreesch et al, 2007). In 2004, there were only 40 physicians and 265 nurses per 100 000 population (WHOSIS, 2007). These health professional densities are relatively high in comparison to other countries in the WHO Africa Region but very low compared to countries like Botswana’s neighbour South Africa, as well as
Canada and the United States\textsuperscript{6} (WHOSIS, 2007). These are national figures and they do not accurately represent the health human resources situation in rural and remote areas of the country, which are likely experiencing even lower staffing levels. Botswana’s HIV/AIDS epidemic, which is increasing the demand for health services, is simultaneously decreasing the supply of professionals available to deliver those services. It is estimated that between 1999 and 2005, 17% of Botswana’s health workforce died as a result of AIDS (WHO, 2007).

\textbf{The National PMTCT Programme}

Botswana’s National Prevention of Mother-to-Child Transmission Programme – the first national PMTCT programme in Africa – was introduced in 1999 (Smith, 2003). The initial pilot programme was launched in the country’s two major cities, Gaborone and Francistown, and carried out between April 1999 and June 2000. Between July 2000 and December 2001 roll-out of the programme took place and PMTCT services, which became part of routine MCH care in public facilities, were made available free of charge countrywide. The Sexual and Reproductive Health Unit under the Family Health Division of the Department of Primary Health Services operates Botswana’s PMTCT programme (Smith, 2003). The National Strategic Framework for HIV/AIDS was devised in 2002 when the rate of vertical HIV transmission in the country was between 21\% and 40\%. At this time, the goal of the PMTCT programme was to reduce the rate of transmission to 20\% by 2006 and 10\% by 2009 (NACA, 2003).

\textsuperscript{6} The average nurse and doctor densities in the WHO Africa Region are 123 nurses and 22.6 doctors per 100 000 population. The approximate number of nurses/physicians per 100 000 population in South Africa, Canada and the US are 408/77, 995/214, and 937/256, respectively [calculations based on WHOSIS (2007) figures].
In accordance with WHO recommended priority strategies for PMTCT scale up, Botswana's PMTCT programme is fully integrated into routine MCH care (UNICEF/WHO/IATT, 2007; MOH, 2005). PMTCT services are available in all public clinics and hospitals as well as in at least 339 public health posts, which are visited by midwives from the clinics (Smith, 2006). The main PMTCT services offered are presented in Table 7.

Table 6: National PMTCT Programme (main components)

| Provider-initiated testing; routine opt-out testing (onsite rapid testing) of all pregnant women during ANC visit; HIV test at start of labour if HIV status is unknown; pre-test group HIV/PMTCT education; pre- and post-test individual counselling |
| HAART for women with CD4 < 200; 2 drug regimen (12 weeks AZT + single dose NVP at onset of labour) for women with CD4 >200; Infants of HIV+ women given single dose of NVP at birth + AZT for 4 weeks |
| Infant feeding counselling for all women regardless of HIV status; Advocate/counsel formula feeding to HIV+ women for first 6 mos; Free formula until age 12 months (distributed at clinics + health facilities); Training on preparation and use of formula |

Source: National Guidelines for PMTCT (MOH, 2005)

During the first two years of the programme, Botswana struggled with relatively low uptake of services resulting in sub-optimal PMTCT of HIV. One of the main contributors to low service uptake was reported to be the lack of time and private space for midwives to counsel women on the risks and benefits of HIV testing (Creek et al, 2005). Originally, nurse midwives provided most of the PMTCT services offered through Botswana’s public health care system during antenatal and prenatal care. When the programme began in 1999, midwives were trained in PMTCT and the provision of pre-test, post-test, supportive, and
infant feeding counselling for women (Creek et al, 2007a). In 2002, a new cadre of health worker, the lay counsellor, was introduced in the public sector to alleviate some of the burden created by extra HIV counselling and testing duties being placed on Botswana’s health professionals at public clinics including nurse-midwives (Creek et al, 2007a).

The Lay Counsellor in Botswana

DEMOGRAPHICS: There is no official demographic data on Botswana’s Lay Counsellors. According to unofficial estimates, the vast majority of LCs are women and they tend to be young adults between the ages of 19 and 22. At one time, approximately 12 out of every 15 LCs in Francistown (Botswana’s second largest city) were women (Creek & Jimbo, 2008).

DISTRIBUTION: Nearly every clinic and hospital in Botswana employs at least one lay counsellor (LC). Larger clinical settings often employ several LCs. In hospitals there may be an LC assigned to work in a specific ward or in a hospital ‘testing room’ where all clients go to get tested. LCs are responsible for working with all clients at most clinics, not just pregnant women (although some of their duties are specifically related to PMTCT) (Creek & Jimbo, 2008). They work under the supervision of the nurse in charge of the clinic or hospital ward (Smith, 2006). Most LCs do not work in their own communities, as this could endanger patient confidentiality (Creek & Jimbo, 2008).
SCOPE: Lay counsellors deliver a number of PMTCT-related services. They also provide administrative services. Specific duties of LCs in Botswana are: Leading pre-HIV-test group education and discussion session on HIV, PMTCT and ANC for women during their first visit to the clinic for ANC (group education is carried out using a nationally standardized flip-chart method); pre-test individual counselling for women who originally opt out of testing; performing and visually interpreting parallel rapid HIV antibody tests\(^7\) (according to a routine, or ‘opt-out’, testing policy); post-test counselling (for HIV-negative women on how to remain negative and for HIV-positive women on their status and on PMTCT); ongoing supportive counselling for women who return for it; infant feeding counselling; client follow-up and referral within the health facility; formation of support groups for HIV positive clients and their families; and record keeping related to their duties for reporting purposes (Creek & Jimbo, 2008).

QUALIFICATIONS & TRAINING: LCs are secondary school graduates with 4 weeks of counselling training. Counselling training is provided by the PMTCT programme and training in rapid testing is run by the laboratory group at the Ministry of Health. Training support is also provided by the US CDC (Creek & Jimbo, 2008). LCs are awarded official certification upon completion of training.

FUNDING: This is a paid position in Botswana. Lay Counsellors are employed to work part-time and are paid approximately the equivalent of USD 200/month.

\(^7\) The results of rapid tests, which use whole blood from a finger stick, are available on the same day that testing takes place. ‘Parallel tests’ refers to two rapid HIV tests performed at the same time whose results must be concordant.
Most LCs are employed by the Ministry of Local Government. This Ministry also employs all nurses, midwives, and doctors that staff Botswana's public health clinics. Some LCs are employed by the Ministry of Health. These are posted in public hospitals. Of the 420 LCs currently employed in the country, about 230 are paid for by the government, and 190 are paid for through funding from international donors (Creek & Jimbo, 2008).

**EVALUATION:** To date, no formal evaluation of Botswana’s lay counsellor programme and contribution of LCs to increasing PMTCT services has been published. However, a key informant from the CDC’s Global AIDS Programme (Creek & Jimbo, 2008) believes that National PMTCT programme uptake in Botswana is currently the highest in Africa and lay counsellors “have been indispensible in improving the programme nationwide.”

Data concerning the success of Botswana’s PMTCT programme in general has been widely published and this information provides an indication of the valuable contribution lay counsellors have made. According to Creek et al (2007a), which reports previously unpublished data collected in Francistown, the uptake of HIV testing among pregnant women was 33% in 2002 when lay counsellors were first employed in public clinics and increased to 60% by the end of 2003. Data from the Nyangabgwe Referral Hospital in Francistown reported by Creek and Jimbo (2008) show that there has been a great increase in the uptake of all PMTCT interventions by HIV-positive pregnant women in that facility between 2002 and 2007. The percentage of HIV-positive pregnant women who
know their HIV status at the time of delivery increased from 33% to over 95% (Creek & Jimbo, 2008). In addition to the introduction of lay counsellors in 2002, two other key programmatic changes have contributed to the great increase in PMTCT service uptake between 2002 and 2007. These were the introduction of provider-initiated, opt-out HIV testing in medical clinics in 2004 (Creek et al, 2007b) and the introduction of routine rapid testing in 2005 (Creek & Jimbo, 2008).

The percentage of HIV-exposed infants infected has also declined in Botswana – another sign of the PMTCT programme’s success. Between June and December 2005, a demonstration project on the early diagnosis of HIV-exposed infants using the dried blood spot (DBS) collection technique was carried out in Francistown. Five percent of HIV-exposed infants less than 8-weeks-old were found to be HIV-positive (4.7% infection rate among HIV-exposed infants tested in a clinic setting and 12.8% infection rate among HIV-exposed infants tested at the referral hospital) (Creek et al, 2008).

Challenges facing the lay counsellor programme in Botswana are related to sustainability and counsellor burnout. Concerns voiced about the sustainability of the programme include: “How to maintain a good cadre of workers over time, pay them fairly for their accumulating experience, and provide career development opportunities that maximize their skills” (Creek & Jimbo, 2008).

**Other Strategies for Scaling Up Access to HHR for HIV/AIDS**

Along with the employment of lay counsellors, Botswana’s public health sector is currently using other strategies to expand access to human resources
for HIV/AIDS. These include outsourcing a proportion of ART patients from the public sector to the private sector for treatment and follow-up (Dreesch et al, 2007); task shifting of ART initiation from physicians to nurses (Miles et al, 2007); and shifting the role of filling and dispensing ARV prescriptions from pharmacists to pharmacy technicians (Dreesch et al, 2007). Finally, a new human resources initiative is reportedly in its initial stage. Based on the successful South African “Mothers to Mothers” model, HIV-positive women will undertake teaching duties, provide counselling and dispense drugs for PMTCT (Creek et al, 2007a).
DISCUSSION

Based on a review of global progress in PMTCT, the Global Partners Forum has officially recognized the use of lay counsellors as a characteristic associated with successful PMTCT programmes (WHO/UNICEF/IATT, 2007). The present case study documents the use of lay counsellors in a national PMTCT programme. Botswana’s experience with lay counsellors provides an example of an HIV/AIDS programme task shifting model in the public sector using community health workers. This experience can potentially provide a useful primary health care delivery model for governments and policy makers in other HIV high-burden countries trying to scale-up PMTCT.

Features of Successful Programmes

The WHO has recently developed a set of global recommendations for task shifting (WHO/PEPFAR/UNAIDS, 2007) and has published reports that describe the features of successful large-scale task shifting and community health worker programmes (Samb et al, 2007; Lehmann & Sanders, 2007). Many of these features are apparent in Botswana’s lay counsellor programme.

Governments, locally, nationally and internationally, need to formally recognize systems that train and deploy community health workers for health care delivery (Samb et al, 2007). Without adequate political and financial support, CHW programmes have remained on the periphery of the formal health system.
and “thus are often fragile and unsustainable” (Lehmann & Sanders, 2007, p. 26). Botswana’s lay counsellor programme is supported politically and financially by the national and the local government and lay counsellors are formally certified government employees. The position and role of lay counsellors are officially integrated into the public health care services delivery system. The programme is supported technically and financially by the Global Fund and BOTUSA. In addition to government leadership, this bilateral and international agency support is reportedly crucial for the sustainability of a task shifting programme (Samb et al, 2007).

A task shifting model involving community health workers requires adequate training mechanisms, the development of standardized task protocols, clear task allocation, and supervision (Samb et al, 2007; Lehmann & Sanders, 2007). Service delivery protocols must be realistically implementable by nonprofessional community members (Samb et al, 2007) and the other measures must be in place to ensure that quality of care is not compromised (Lehmann & Sanders, 2007). In Botswana, all lay counsellors are provided standardized theoretical and practical training in counselling and testing. According to PMTCT policy in the country, rapid testing is the standard of care for women in antenatal clinics, which is a relatively simple procedure. Lay counsellors perform group education sessions using a standardized flip-chart method and all education materials are provided for them. The lay counsellor is an institutionalized position in Botswana and entails a clearly defined set of tasks. Finally, lay counsellors
officially work under the supervision of nurses and thus, at least in theory, there is a quality monitoring system in place.

One of the reasons for the apparent success and relative sustainability of Botswana’s lay counsellor model is that the position is a paid one. According to Lehmann and Sanders (2007) “there exists virtually no evidence that volunteerism can be sustained for long periods: as a rule, community health workers are poor; they expect and require an income” (p. 27). Lay counsellors earn about USD 2400 a year to work part-time. Of course, unlike most other countries in Southern Africa, Botswana is a middle-income country in a better position financially to support the employment of lay counsellors, and there is considerable support provided by the Global Fund. Based on their review of CHW programmes, Lehmann and Sanders (2007) argue that with the right combination of national and international support, financial resources should not stand in the way of implementing such a programme in low-income countries and communities:

“Given present pressures on health systems and their proven inability to respond adequately, the existing evidence overwhelmingly suggests that particularly in poor countries CHW programmes are not cheap or easy buy are nonetheless a good investment, since the alternative in reality is no care for the poor living in geographically peripheral areas” (p. 27).

One of the most important features of a sustainable task shifting model for enhancing access to HIV services is said to be the alignment of task shifting with the broader strengthening of health systems (Samb et al, 2007). Lay counsellors in Botswana work as part of a national PMTCT programme that has been
integrated into routine MCH services and linked with the national ART programme. Lay counsellors in Botswana alleviate some of the extra burden placed on health professionals in primary care and MCH settings thereby decreasing their workloads. As a result, the quality of care for all clients, not just HIV-positive mothers, at clinics and hospitals employing LCs can be theoretically improved.
SUMMARY AND RECOMMENDATIONS

Botswana’s lay counsellor programme meets many of the WHO recommendations for the scale-up of task shifting for HIV/AIDS programmes and the expanded use of community health workers. As such, it may provide a useful model for other countries in the region facing similar HIV epidemics and high rates of paediatric HIV infection in the context of health professional shortages. Botswana’s experience with lay counsellors provides an example of how the task shifting of some PMTCT programme tasks to community health workers has been implemented in practice.

The shifting of some PMTCT-related tasks from trained health professionals to lay workers is one strategy proposed to help alleviate the extra burden of integrating PMTCT services into the routine package of MCH care in high-burden settings like Southern Africa (UNICEF/WHO/IATT, 2007). However, there is currently a lack of evidence of effective task shifting training models (Samb et al, 2007), and a lack of documented examples of successful large-scale CHW programmes (Lehmann & Sanders, 2007). This report helps to fill this gap in knowledge and evidence by documenting the use of non-professional community counsellors in the National PMTCT programme of an HIV high-burden country. Based on my findings, I make the following recommendations:
A) A formal evaluation study of Botswana’s lay counsellor programme should be carried out. The goal of this evaluation would be to provide scientific evidence of the effectiveness of using lay counsellors in a PMTCT programme;

B) A systematic review and documentation of the use of lay/community counsellors for the provision of PMTCT services in all eight HIV high-burden countries in Southern Africa should be carried out. This study should ideally be done by someone on the ground and should involve a systematic literature review (peer-reviewed and unpublished literature), key informant interviews, a survey of health facilities, and a review of policy documents. The goal of this study would be to determine and compare to what extent and in what capacity lay counsellors are currently being utilized for the provision of PMTCT services in various countries;

C) A regional meeting to discuss country experiences with task shifting and community health workers should be organized in Southern Africa. Participants should include representatives from national and local governments involved in PMTCT programme planning and delivery, health professionals, NGO and other donor representatives, and individuals working as lay/community counsellors. The goal of this meeting would be to produce a set of adaptable best practice guidelines.
REFERENCE LIST


