



Prevention of Mother-to-Child HIV Transmission (PMTCT) in the Republic of Congo: Challenges to Implementation

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Abstract

Introduction: The HIV infection rate has fallen sharply among pregnant women in the Republic of Congo (ROC), declining from 4.2% in 2003 to 2.5% in 2013. However, the rate of HIV vertical transmission observed in Congo is about 34% and the mortality rate of children born to HIV-positive mothers is high. Since the implementation of the program for the Prevention of Mother-to-Child HIV Transmission (PMTCT) in 2002, all prevention activities are based on the collaboration with Ambulatory Treatment Centers (CTA) and the Kento-Mwana project. The Ministry of Health in the ROC is in the process of establishing a new PMTCT strategy to reach a country-wide coverage.

Objective: This review aims at examining the implementation of PMTCT in the ROC.

Methodology: We searched for papers in the PubMed database with keywords related to Congo, HIV, PMTCT and pregnancy. Results were then manually curated. The subset of PubMed papers was enriched with reports from WHO, UNAIDS, UNICEF and from Congolese health institutions (written in English or in French).

Finding: Maternal HIV infection remains a public health concern, not only for pregnant women but also for children whose vertical transmission could be canceled if adapted therapeutic strategies are applied. The challenges are still many to come to an elimination of pediatric HIV, including the refusal of HIV testing by pregnant women and the difficulty in obtaining HIV PCR tests. It is therefore imperative for the Ministry of Health in the ROC to establish a national PMTCT strategy to cover most of the health facilities in the country.

Keywords: PMTCT; HIV; Implementation; Vertical transmission; Pregnant women; Antiretroviral

Background

HIV epidemic

In 2013, the UNAIDS estimated at 35 million the number of people living in the world with the human immunodeficiency virus (HIV). Of these, 24.7 million lived in sub-Saharan Africa, of whom 58% are women [1]. The number of people who are newly infected with HIV is estimated at 1.5 million and those who die from causes related to the acquired immunodeficiency syndrome (AIDS) are estimated at 1.1 million [1]. HIV is a major cause of death among women of reproductive age.

The reduction of maternal mortality remains a current issue [2,3]. Each year, the percentage of untreated women contributes to the death of 37,000 women living with HIV, of whom many die from complications related to pregnancy [4,5]. Without any antiretroviral therapy (ART), 50% of women can potentially transmit the virus to their children during their pregnancy [6].

The Republic of Congo (ROC), with a population of 4.5 million inhabitants, has 69,000 HIV patients including 35,000 women, in 2013 [7]. In 2005, Le Cœur et al. found that HIV prevalence was higher in women than in men, and the mortality rate was 6.3 per thousand for women and 4.9 per thousand for men [8]. Nationally, HIV prevalence was 2.5% in 2013 [9] and the number of deaths due to HIV/AIDS was about 5,400 [9]. The HIV infection rate has fallen sharply among pregnant women in the ROC, decreasing from 4.2% in 2003 to 2.5% in 2013 [7].

Prevention of mother-to-child HIV transmission

In the absence of any ART administered to the mother, the rate of mother-to-child transmission (MTCT) of HIV is 25-45% [10-12]. Without treatment, about one third of children born HIV-positive will die before their first anniversary and half of them will die in their second year of birth [5,13]. However, transmission and most of child deaths related to HIV can be avoided with an adapted care during pregnancy, childbirth and breastfeeding [2,3,14].

By contrast, with effective therapeutic interventions, the risk of MTCT can be reduced to 2% [15-17]. In many studies, a zero rate of HIV transmission was even observed at childbirth and shortly after baby's birth [18-21]. The key of the success of the prevention of MTCT lies mainly in the access to care and ART during pregnancy, childbirth and during the first months of life [22-24].

With 34.4%, the rate of vertical HIV transmission in Congo is

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among the highest rates in Africa. This rate is significantly higher than those of Gabon and Burkina Faso which are 14.4% and 22.4%, respectively [25]. The mortality rate among children born from HIV-positive mothers was high [26]. In 2010, Lallemand et al. observed a rate of 10.5% of deaths among children attributed to HIV/AIDS [27]. No recent studies have been conducted in Congo to assess the rate of MTCT of HIV and the evolution of mortality in children infected through vertical transmission.

Moreover, previous studies conducted in the ROC provide an overview of maternal health related to HIV, but they are still insufficient to help understand the health situation of HIV-infected women, and the outcomes of their pregnancies. A review on PMTCT in the ROC is necessary in order to assess what has been done or what may be done for the elimination of mother-to-child HIV transmission. Previously conducted studies were limited to large cities (Brazzaville and Pointe-Noire) and did not cover the whole country. No studies at the national level have been conducted on a large population of pregnant women to assess the magnitude of the HIV issue. This review therefore has two objectives: 1) Examining the historical process of PMTCT implementation in the ROC; 2) Presenting the obstacles and difficulties encountered in the PMTCT implementation strategies in the ROC.

Methodology

We used the PubMed database to retrieve research articles about PMTCT in ROC. The query was: (congo* [Title/Abstract]) NOT (democratic republic [Title/Abstract]) NOT (DR Congo) AND (HIV [Title/Abstract]) AND ((*MTCT [Title/Abstract]) OR (pregnant * [Title/Abstract])). Articles were then manually selected on the basis of their abstract. Other documents not indexed by PubMed also served as references for this work: WHO, UNAIDS and UNAIDS reports and Congolese health institutions (SEP/CNLS) internal reports.

Findings

Search flow chart

We identified 22 publications in PubMed, 8 articles were manually selected. This selection was enriched by 5 WHO, UNAIDS or UNICEF reports and 4 reports from Congolese health institution (SEP/CNLS). Details related to the search workflow are represented in the Figure 1. We also selected articles related to mother-to-child HIV-1 transmission in West and Central Africa.

Historical overview of PMTCT implementation in the ROC

The PMTCT of HIV appears to be well established worldwide [28].

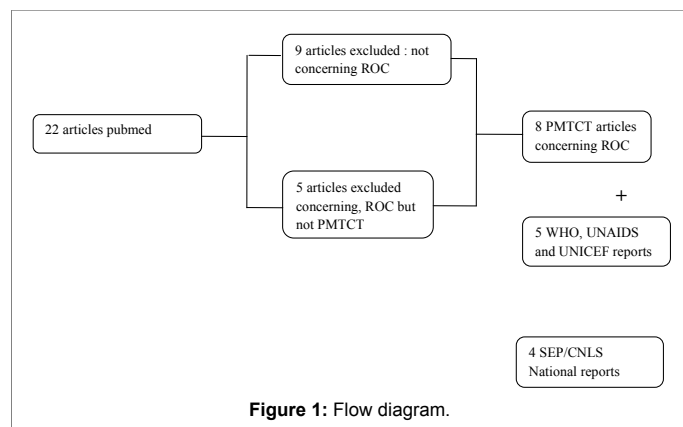


Figure 1: Flow diagram.

In the ROC, a national program has been implemented since 2002 [29]. Since then, several PMTCT projects have been launched: the French Red Cross project in 1994 in Brazzaville and in 2003 in Pointe-Noire; the Kento-Mwana project in 2005 also in Pointe-Noire; PMTCT projects financed by OFID in the northern part of the ROC, between 2006 and 2007 [29].

The extension of the integration of PMTCT services into the activities of Integrated Health Centers (IHC) and hospital maternity wards throughout the country has been effective in 2007 [29]. The number of IHC and maternity wards providing Voluntary Counseling and Testing (VCT) services and MTCT prophylaxis for pregnant women in late 2007 was 37 and 17, respectively [29]. In 2013, the full package of activities for the PMTCT of HIV has been incorporated in 22 out of 87 health facilities [30]. The percentage of health facilities providing VCT services as part of PMTCT according to the national protocols is 40%. By contrast, the coverage of the full PMTCT package is 6%. This low service coverage shows that significant efforts are required from all stakeholders to achieve the goal of eliminating MTCT by 2017 [30].

In 2013, there were 36 pediatric sites providing care for 1,302 children including 1,170 children receiving ART. However, it is estimated that 7,285 children require ART [30]. The national ART coverage among infected children under 15 years is 16%. Medical care of children and PMTCT remained the weak links in the national response in the ROC [30].

Pediatric care provided in public pediatric facilities (30 sites) was weakly conducted and not documented and PMTCT data are not routinely provided at national level [31]. No study or report mentions this activity in pediatric facilities.

Since the implementation of the PMTCT program, the main activities have been conducted on the basis of collaboration between Ambulatory Treatment Centers (CTA) and the Kento-Mwana project [32,33]. The goal of the Kento Mwana project is to reduce the rate of mother-to-child transmission of HIV in HIV-positive pregnant women to between 3% and 2%. To this end, the project plans to provide pregnant women with counseling services, as well as access to free voluntary screening. The coverage in terms of testing and monitoring of infected pregnant women is different depending on the study sites. Unlike the Kento-Mwana project that was limited in time: 2005-2008 for the first part and 2009-2012 for the second part [34-36], CTA provide continuous ambulatory care for all women who attend the center [32]. This low coverage of the Kento-Mwana project allows for the questioning of the organizational background in which the PMTCT program has been implemented.

Currently, new strategies are being deployed in a few primary health centers such as referral hospitals (Brazzaville and Pointe-Noire), the two military hospitals in Brazzaville and Pointe-Noire) and base hospitals (Makélékélé and Mfilou in Brazzaville [34,36-38].

Other implementation efforts are underway, with the expansion of the PMTCT program to Integrated Health Centers with maternal care. This strategy will help to cover the remote areas where women have to travel a long distance to reach the closest primary health center [39].

Treatment for HIV-positive pregnant women

PMTCT in the ROC is based primarily on two health projects implemented in three hospitals: the military hospital in Pointe-Noire, the University Hospital of Brazzaville and the Adolphe Cissé hospital in Pointe-Noire. A network of Ambulatory Treatment Centers (Centres de Traitement Ambulatoire, CTA) has been founded by the

French Red Cross in order to fight HIV/AIDS in French-speaking countries in Africa [40]. Two CTAs have been set up at the University Hospital of Brazzaville and at the Adolphe Cissé hospital in Pointe-Noire. The Kento-Mwana project is another project supported by the ENI foundation [34-36, 38,41,42]. It aimed to provide counseling, serological and molecular diagnosis, therapeutic care for HIV-positive pregnant women and their children [34-36,38].

However, HIV testing remains the first step to be taken by pregnant women in the fight against HIV. Bruzzone et al. showed the importance of applying various strategies for HIV testing in a population of pregnant women, especially by using different second-line diagnostic methods for HIV testing or molecular methods [34]. This could probably allow avoiding cases of false positivity, especially in pregnant women [34,43,44]. These could be false positive testing could be related to the performance of each assay [34], the problem of false positives in pregnant women has quickly dramatic consequences for both the mother and the embryo.

HIV prevalence among pregnant women and its vertical transmission

In the ROC, studies have been conducted on the diagnosis of HIV in pregnant women, and then on MTCT of HIV [26,41,45-47]. Two studies showed similar prevalence of HIV among pregnant women with respectively 3.9 and 4.8% [38,47].

Lallemant et al. reported a MTCT rate of 40.4% among mothers who were not receiving ART [41]. This figure is in agreement with the UNICEF estimation of 34.4% in the ROC [25].

Challenges faced in the implementation of PMTCT strategies

Two studies showed that a vertical transmission rate of 1.7% or even 0.0% can be achieved in the ROC [35,36,38]. A complete elimination of MTCT has been observed in several studies in Burkina-Faso [18-20]. This elimination of MTCT is not yet achieved in the ROC, where barriers still prevent the emergence of the national PMTCT program.

The first obstacle: The refusal of HIV testing by pregnant women

HIV testing is routinely offered to pregnant women, but 20% of them still refuse it [39]. Furthermore, women are used to start their prenatal follow-up late in their pregnancy. The first prenatal consultation is usually at 26 weeks gestation, whereas the mean term at delivery is 38 weeks gestation [48].

The second obstacle: Shortage in the supply of antiretroviral drugs and testing reagents

Another obstacle is the shortage in the supply of ART which often lasts for several days; even children born to HIV-positive mothers are still not supplied with doses of AZT that can protect them from possible HIV transmission while they are breastfed. Added to this situation is the lack of necessary reagents for laboratory tests. This shortage of reagents prevents the continuous clinical monitoring of patients.

The third obstacle: The dilemma of breastfeeding

In many African countries, breastfeeding is in the norm and is recommended by WHO. Several studies have shown the link between the lack of breastfeeding and increased child morbidity and mortality [49-54]. However, in case of seropositive mothers, breastfeeding makes children highly vulnerable to HIV. The type of breastfeeding (exclusive, predominant or mixed) and its duration are two fundamental

parameters that influence the relationship between breastfeeding and HIV transmission to the newborn.

In the ROC, mothers can continue to breastfeed their children if they receive ART [27,38]. However, artificial feeding for infants born from HIV-infected mothers is still predominant especially among those with high incomes [38].

The fourth obstacle: Low adherence to PMTCT

The low adherence of pregnant women to the PMTCT is induced partly by the lack of monitoring services, poor integration and the uneven distribution of those services across the national territory [29]. Approximately 70% of the PMTCT offer is concentrated in Brazzaville and Pointe-Noire [30,55]. These two cities harbor 52% of the Congolese population.

The poor *adherence* of pregnant women in the PMTCT program is primarily related to the following reasons: a shortage in ART supply, a non-regular psychological monitoring and a precarious socio-economic environment of patients [30].

The fifth obstacle: Difficulty in obtaining HIV PCR tests

In addition to all challenges mentioned above, obtaining HIV diagnosis by PCR is an issue [27]. Indeed, early diagnosis by PCR for children born to HIV-positive mothers is only possible in Pointe-Noire and Brazzaville [27,42].

The sixth obstacle: Stigma, discrimination and implication of male partners

Stigma and discrimination against people living with HIV in the ROC is also a major barrier to access to PMTCT services [29,56]. Despite these challenges, the population is called to respond to the PMTCT program to achieve zero new infections. No studies have been conducted to assess the participation of men in pregnancies of their women. The Congolese government should plan how to raise awareness, in general and the family in particular, using all available communication tools.

PMTCT performances in the ROC

Despite the shortcomings, PMTCT in the ROC has made some progress. Thus, the number of pregnant women accepting voluntary counseling and HIV testing is 84% [29]. HIV prevalence has decreased to less than 5% in 2013 [29]. In 2007, 37 sites offered PMTCT services, currently 50 sites exist. These achievements need to be strengthened to improve women's health care access.

Conclusion

Maternal HIV infection in the ROC remains a major public health concern due to the high prevalence among women of reproductive age and poor prognosis for children infected during the perinatal period. It is important to significantly reduce the number of deaths caused by HIV among children, but also the MTCT rate to less than 2%. It is even possible to completely eradicate HIV transmission if therapeutic strategies for care, testing and sensitization are well implemented and applied in all maternal and child care centers.

The elimination of pediatric infection and improved monitoring of children infected with HIV remain major challenges for the Congolese health system. The French Red Cross and the Kento-Mwana project have started this endeavor advocated for greater consideration of pediatric HIV. Those projects have been significant and effective precursors in the implementation of PMTCT in the ROC.

A national PMTCT strategy that includes sensitization for pregnant women, pre- and post-HIV test counseling, testing, therapeutic care through ART and HIV early diagnostic tests by PCR in newborns may be implemented throughout the Congolese territory to eradicate the MTCT of HIV.

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