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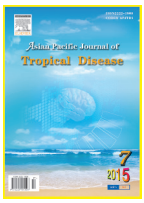

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# Integration of HIV services into the National Tuberculosis Program of Cameroon: the experience of the Littoral Province

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ABSTRACT

**Objective:** To evaluate the implementation of collaborative HIV/TB activities recommended by the World Health Organization in the Littoral Province of Cameroon from 2007 to 2009.

**Methods:** Data from the tuberculosis (TB) and HIV registers of 30 health facilities (basic management units for TB) from 2007 to 2009 were analysed. During this time period, standard operating procedures for antituberculous therapy, HIV testing of TB patients, and cotrimoxazole prophylaxis for HIV positive TB patients, had been introduced and monitored. Measures had been taken to ensure the continuous availability of HIV test reagents and cotrimoxazole, and charges for HIV tests and cotrimoxazole had been abolished.

**Results:** The HIV testing rate rose from 55.0% in 2007 to 91.7% in 2009 ($P < 0.000\,1$). The cotrimoxazole prescribing rate in TB/HIV co-infected patients increased from 76.1% in 2008 to 93.5% in 2009 ($P < 0.000\,1$). The mortality of newly-recruited TB patients fell from 7.2% in 2007 to 3.1% in 2009 ($P < 0.000\,1$).

**Conclusions:** A structured approach towards integration of HIV and TB services effectively improves HIV case detection and cotrimoxazole prescription among TB/HIV co-infected patients in Cameroon. This approach can achieve a significant reduction of the mortality in this patient group.

## 1. Introduction

Cameroon, a country of about 20.5 million inhabitants, bears a high burden of tuberculosis (TB) and HIV infection. According to the World Health Organization (WHO) estimates of 2012, the TB incidence (all forms) in Cameroon is 190 per 100 000 inhabitants, of which 80 are "open" cases (*i.e.* sputum smear positive pulmonary TB). This translates to an expected 37 000 TB cases and 15 600 "open" TB cases, respectively. In 2004, the prevalence of HIV in the 15-49 years age group was estimated to be 5.5% (men 4.1%, women 6.3%)[1].

No nationwide survey has been done to determine the TB/HIV co-infection rate in Cameroon. One study in the Northwest Province of Cameroon found a HIV prevalence of 68.5% among TB patients, while a study in Douala reported 51.6% of the TB to be HIV positive[2,3].

Like most other countries in sub-Saharan Africa, and in agreement with the WHO recommendations of that time, Cameroon's policymakers had responded to the AIDS epidemic, and to the surge of TB cases during the 1990's, by setting up two separate "vertical" programs, the National AIDS Control Program (NACP, established in 1989), and the National Tuberculosis Program (NTP, established in 1997). Over time, the need for coordination and collaboration between these two programs became more evident, and in 2003, the Republic of Cameroon allotted budget funds for the addition of HIV services to NTP. National recommendations were issued to systematically offer HIV

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testing to all TB patients, and cotrimoxazole preventive treatment along with other services, to HIV-infected TB patients. In addition, columns for recording HIV test results and cotrimoxazole treatment were to be added to all TB treatment registers.

In 2004, WHO recommended that, as part of the "STOP TB" strategy for the decade from 2006 until 2015, HIV and TB control services should be combined in order to serve the three purposes of establishing collaboration between HIV and TB services; reducing the burden of TB in patients with HIV; and reducing the burden of HIV in patients with TB[4]. To diminish the HIV burden in TB patients, the WHO recommended five activities: Providing HIV testing and counseling; Introducing HIV prevention methods; Introducing cotrimoxazole preventive therapy for HIV positive TB patients; Ensuring HIV/AIDS care and support; and introducing HIV antiretroviral therapy.

In 2007, an evaluation study carried out by the TB Control Unit of the Littoral Province showed that most of the local hospitals and health centers comprising basic management units (BMUs) for the diagnosis and treatment for TB failed to carry out the national policy, even though the patient fees charged for HIV testing had been waived that year. As a consequence, measures were drafted in order to implement, as a minimum, HIV testing for all TB patients, and preventive cotrimoxazole treatment for all HIV positive TB patients, in all BMUs of the Littoral Province. In addition, measures were taken to ensure an uninterrupted supply of HIV test reagents and cotrimoxazole to all BMUs, and to enforce regular performance monitoring for each BMU.

This study evaluates the functioning of the described collaborative HIV/TB activities during the two years since their implementation in the Littoral Province in 2007, its effects on TB patient care, and consequences for the TB programs of other Cameroonian provinces.

## 2. Materials and methods

This retrospective study was conducted in the Littoral Province of Cameroon, which includes Douala, the economic capital of Cameroon, with an estimated population of about 3 000 000 inhabitants. The Littoral Province accounts for about 20% of TB cases in Cameroon.

Over the study period, data were obtained from thirty BMUs that provided health care for TB patients. Of these, 18 were government owned, and 12 were church-owned. Data from all TB patients aged 15 years or older, who had been identified and registered by the NTP in the Cameroonian Province of Littoral between the fourth quarter of 2007 and the fourth quarter of 2009, were included in this study.

For this study, data were extracted from the hand-written patient standard TB registers (WHO format) of 30 BMUs, since computerized record-keeping did not exist in any of these health care facilities. Nineteen of these BMUs were situated in the City of Douala, while eleven BMUs were situated in the three rural districts of the Province, Sangara Maritime, Nkam and Moungo. Many health care facilities with BMUs polled for this study were as follows: Center of Pneumology and Tuberculosis, Laquintinie Hospital, Catholic Health Center Barcelone, Urban District Hospital of Bonassama, Hospital "Saint Albert the Great", District Hospital, District of Deido, Hospital of the District of New Bell, Hospital of the District of Nylon, Integrated Catholic Health Center of Oyack, Military Hospital of Douala, Medical Center of the Arrondissement Cîté Sic, Hospital of the District of Log-Baba, Baptist Hospital at Mboppi-Douala, Catholic Health Center Miséricorde, Medical Center of the Arrondissement de Bépanda, Hospital "Ad Lucem" Bonamoussadi, Hospital of the District of the Cité des Palmiers, General Hospital of Douala, Medical Center of the Arrondissement de Delangue, Catholic Medical Center of the Arrondissement de Dibamba, Health Center of Ekol-Mbeng, District Hospital of Loum, District Hospital of Mbanga, Hospital "Saint John of Malta", Douala, CEBEC Hospital of Ndoungue, District Hospital of Nkondjock, District Hospital of Nkongsamba, Catholic Hospital of Pouma, EPC Hospital of Sakbayémé, District Hospital and District of Yabassi.

In order to extract patient data, one of the authors (JCP) visited each BMU during the second quarter of 2010. These visits had been announced, and their purpose had been explained, by representatives of the Provincial Health Delegation in close cooperation with the German Technical Cooperation (now German International Cooperation).

During these visits, data were extracted from the TB and HIV patient registers of the facilities visited. The data were entered into Microsoft™ EXCEL tables, and summarized for each quarter. In addition, the data from standardized TB treatment registers were cross-checked against the quarterly reports of the NTP, which had been validated by external monitoring. The following parameters were evaluated to obtain both base line data (fourth quarter of 2007) and follow-up data (first quarter of 2008 until fourth quarter of 2009): the number of all newly registered TB patients; the number of the TB patients who agreed to HIV testing and were tested from HIV; the number of positive HIV test results; the number of HIV positive TB patients who received cotrimoxazole prophylaxis; the number of newly-registered TB patients who died during each quarter.

Additional information was obtained through semi-structured interviews with the hosts of each BMU by asking about difficulties encountered while integrating HIV-related services into TB patient care.

Numbers and frequencies were calculated for each category and quarter and analyzed with the software packages statistical analysis systems and "Statistical Package for the Social Sciences" (SPSS) by *Chi*-square testing and Mantel-Haenszel testing. *P* values of 0.05 or lower were considered significant.

## 3. Results

### *3.1. Base line evaluation: fourth quarter of 2007*

The base line evaluation covered 1 396 newly identified TB patients, registered in 30 health care facilities in the Littoral Province of Cameroon during the fourth quarter of 2007. Only 773 of these (55.0%) were tested for HIV, and 600 of 773 patients (77.6 %) were HIV positive.

Cotrimoxazole prophylaxis for HIV positive TB patients had already been part of the 2004 guidelines of the Cameroonian NTP. However, it was not yet recorded in the TB registers since they did not have a column for recording cotrimoxazole prophylaxis at that time. Interviews with the staff of the BMU's revealed that other reasons for inconsistent HIV testing and failure to prescribe cotrimoxazole included lack of staff awareness, as well as logistical problems. HIV tests were offered for free only in 11 of 30 health care facilities, while others charged between 500 FCFA (0.76 Euros or 1.01 US dollars at the time) and 3 000 FCFA (4.57 Euros or 6.04 US dollars at the time). In many health care facilities, HIV test kits and