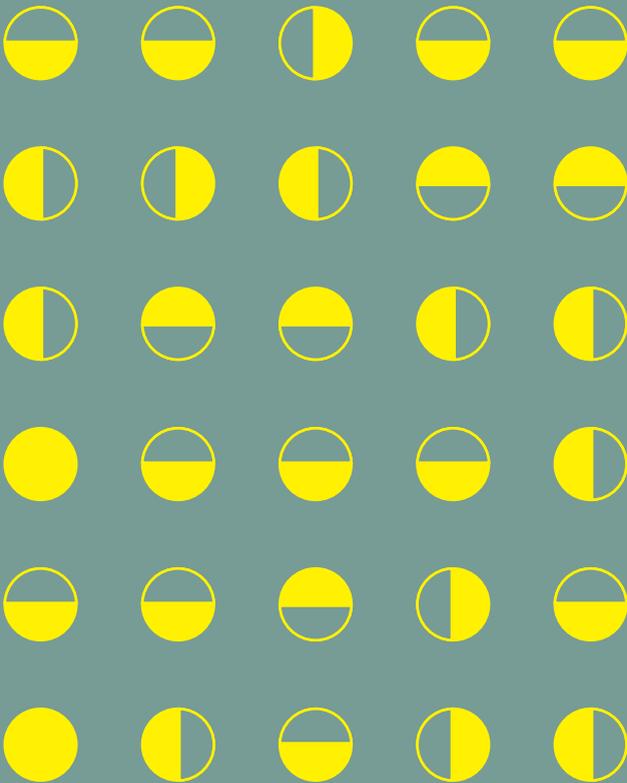# TUBERCULOSIS
AMONG PEOPLE WHO USE DRUGS
IN ABIDJAN, CÔTE D'IVOIRE

PREVALENCE, MANAGEMENT
AND COMMUNITY-BASED SUPPORT MODEL

EXECUTIVE SUMMARY

MÉDECINS
DU MONDE

INTRODUCTION

In the mid-2000s, West Africa became a major transit hub for heroin and cocaine trafficking, facilitating the emergence of local markets and resulting in an increase in drug users (DUs).[1,2] Cannabis, heroin and cocaine, usually inhaled, are the most commonly used drugs in Côte d'Ivoire.[3] Abidjan, the country's economic capital, has drug consumption areas (known as smoking rooms) in various locations, where drugs are purchased and used. Abidjan's estimated 6,000 DUs are known to have specific health issues, particularly tuberculosis.

With 10.4 million new cases and 1.7 million deaths worldwide in 2016, tuberculosis (TB) is still a major public health challenge.[4] It is the leading cause of death from a single infectious agent, ahead of HIV/AIDS. As the incidence of TB declines, the burden of the disease is increasingly borne by urban subpopulations living in harsh conditions, such as DUs.[5,6]

The World Health Organization estimated there were 36,000 new cases of tuberculosis in Côte d'Ivoire in 2016, i.e. a prevalence rate of 0.2%[4] among the general population. In 2017, 21,307 cases that included all forms of tuberculosis were reported to the National Tuberculosis Control Programme, i.e. 59% of the total estimated number of cases.[7] Although DUs are a particularly at-risk group for TB and field experience suggests a high prevalence among this population, there is virtually no data on TB prevalence. The aim of the survey was thus to estimate the prevalence of pulmonary TB among DUs in Abidjan and assess the cascade of care available to DUs with confirmed pulmonary tuberculosis (TB+) participating in a community-based support programme.

METHODS

The two-part survey targeted people over the age of 18 years who had used heroin and/or cocaine/crack in the previous six months, regardless of the method employed. The first part, which covered diagnosis, consisted in a cross-sectional prevalence estimation survey with systematic testing available in mobile units near the smoking rooms. The survey was made available to all DUs present in two smoking rooms in Abidjan districts Yopougon and Treichville at the time of its implementation. The second part, which covered treatment, was a prospective survey. Thus, all people who tested positive for pulmonary TB and who agreed to start TB treatment were offered follow-up for the duration of their treatment. They were also invited to participate in a community-based support programme proposing various activities, e.g. family mediation visits, self-help groups, personalised follow-up interviews, nutritional and financial support.

On their inclusion in the survey, the following data was collected: a face-to-face socio-behavioural questionnaire, rapid diagnostic tests (RDTs) for HIV, a clinical examination, sputum collection and chest x-rays for pulmonary TB testing. Direct microscopic examination and Xpert MTB/RIF® analyses were performed on sputum. Those who tested positive for Xpert MTB/RIF® were considered to have confirmed pulmonary TB (TB+). If the rifampicin test was positive, individuals were considered to have rifampicin-resistant pulmonary TB (RIF-TB). The questionnaire collected data on: socio-demographic situation, drug use, imprisonment, sexual practices, knowledge of TB, access to TB and HIV testing and care, stigma and discrimination.

After a descriptive analysis, TB, RR-TB, TB/HIV co-infection and HIV prevalence were calculated on the basis of the total number of participants for whom test results were available. A multivariate logistic regression was performed to determine the factors associated with TB infection, with adjustments for smoking rooms, gender and age. A significance level of 5% was considered for the final multivariate model. In the case of testing algorithms, the algorithm used as reference was systematic testing with Xpert MTB/RIF®. Only participants with results from all the tests were taken into account in this algorithm analysis. To compare with the reference algorithm, the main indicator was the sensitivity of the algorithm (ability to detect TB+ cases among participants). To evaluate the effectiveness of the treatment, participants were considered at the end of their treatment as having been successfully treated if they were registered as "cured", "treatment finished" or "treatment completed" in the follow-up booklets provided by the Anti-Tuberculosis Centre. R software (version 3.4.3) was used to perform the analyses.

The protocol was validated by Côte d'Ivoire's National Ethics and Research Committee. All participants took part voluntarily and signed informed consent forms prior to inclusion in the survey.

RESULTS

Between October 2016 and May 2017, 545 DUs were informed about the survey and 532 agreed to participate, i.e. a testing acceptability rate of 97.6%. The vast majority of the sample were male (n=484; 91.0%) single (n=434; 81.6%), with an average age of 34.9 years. Most lived with family or friends (n=331; 62.2%). Over half were in employment (n=315; 59.2%) and almost two-thirds had at least a secondary school education (n=346; 65.0%). The majority of drugs used were heroin and crack (n=530; 99.6% and n=353; 66.4%, respectively) and were inhaled (i.e. smoked). Injection was extremely uncommon (n=5; 0.9% had injected at least once). Almost half of the participants (n=260; 48.9%) had been incarcerated at least once.

Of the 531 participants with an Xpert MTB/RIF® test result, 52 were diagnosed with pulmonary TB, i.e. a prevalence of 9.8% 95% CI: 7.5% - 12.7%. 9 of the 52 (17.3%) had RIF-TB and 8 (15.4%) were co-infected with HIV. Of the 522 participants with a HIV test result, 29 tested positive for HIV, i.e. a prevalence of 5.6% 95% CI: 3.8% - 8.0%.

Factors significantly associated with TB infection in DUs in multivariate analysis were: recruited for the survey in the Treichville smoking room (OR: 2.0[1.1 - 3.7]; p= 0.03), unemployed (OR: 1.8[1.0 - 3.4]; p= 0.05), co-infected with HIV (OR: 3.3.3[1.2 - 8.1]; p= 0.01).

Regarding the testing algorithms, 485 participants were included in the analyses, with 46 positive Xpert MTB/RIF® cases (9.5%). The national testing algorithm (clinical signs + direct microscopic examination of sputum) detected 11 cases (23.9% sensitivity). Thus, the national algorithm would not have detected 76% of TB+ DUs. Other algorithms including the different examinations had a sensitivity rate of between 13.0% (clinical signs + chest x-rays + direct microscopic examination of sputum) and 71.7% (clinical signs + Xpert MTB/RIF®).

Lastly, of the 52 participants identified as having confirmed pulmonary TB, 40 (76.9%) came back to get their results and agreed to be put on treatment and participate in the part of the survey on treatment. 24 out of 40 participants (60.0%) were successfully treated; 3 (7.5%) failed their treatment; 11 (27.5%) did not complete their treatment (4 died during the survey); and 2 had a not yet available definitive status (treatment ongoing or awaiting biological results).

The outcome of the community-based support programme was as follows: 31 family mediation visits made with 21 participants, 11 self-help groups with 34 participants held in the two smoking rooms and 151 follow-up interviews held with 34 participants.

CONCLUSION AND RECOMMENDATIONS

First of all, the results of the survey suggest that, thanks to the community-based approach, it is quite feasible to roll out systematic tuberculosis-testing programmes in drug user sites, with a high acceptability among DUs (97.6%).

With a TB prevalence rate of 9.8%, the survey confirmed the hypothesis that there is a high prevalence of TB and RR-TB among this DU population in difficulty. 17.3% of the 9.8% were rifampicin-resistant. This TB prevalence is nearly 50 times that of the Ivorian population in general (i.e. 0.2%). Algorithm analyses show that, compared to systematic testing with Xpert MTB/RIF®, the other algorithms have unacceptable sensitivities for a population with such high prevalence.

The results of the part of the survey on treatment suggest that it is feasible, vital and pertinent to set up a community-based support programme to monitor treatment uptake among TB+ DUs, who have a high level of adherence to activities made available to them. Thus, this community-based support model enables high treatment efficacy (i.e. 60%) among a population posing significant challenges in terms of both adherence and follow-up.

Based on these conclusions, there are several recommendations:

- **It is urgent to view DUs as a key population in the fight against TB at national level, and more specifically in Abidjan.** Eradicating TB within the country can only be achieved if human and financial resources are specifically allocated and activities adapted to DUs are rapidly set up.
- **The national algorithm must be reviewed to make Genexpert testing available to DUs, as is the case of other key populations (e.g. PLWHIV).** Some sites, such as DU community care centres, seem particularly suited to offering Genexpert testing to DUs and a budget should be allocated to this purpose.
- **When setting up activities adapted to DUs, it is crucial to explore integrated action models, including harm reduction activities and access to a holistic approach to drug use (HIV, TB, hepatitis B, hepatitis C testing services, opiate substitution treatments and basic care) based on a robust community-based strategy.** These integrated models provide a comprehensive approach to health among DUs and improve their access to health services and monitoring.
- **It is essential to support, formalise and sustain a community-based support model for DUs** to connect with them in smoking rooms, provide information, raise awareness and facilitate the implementation of local mobile actions, support with referrals and treatment for TB+ and/or HIV+ DUs.

- To reduce stigma and discrimination among TB+ DUs, peers must be on hand to provide information and raise awareness to TB (symptoms, transmission, treatment) in places where drugs are used.
- **It is important to include DUs in TB research projects, as much in Côte d'Ivoire as internationally, such as clinical research into new treatments and operational research to enable access to more data on this group of people and guide public policy.** For example, very little data is available on female DUs, despite their specific issues and need for ad hoc services.
- **Lastly, extensive reflection on decriminalising drug use is called for in Côte d'Ivoire and at the global level** to reduce the vulnerability of DUs, prevent their marginalisation and lessen the number of incarcerations resulting from illicit drug use. This would ensure DUs access to harm reduction, prevention and health services.

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