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**PROPOSAL
FOR A STRATEGIC PLAN
AND OPERATIONAL ASPECTS
FOR THE CONTROL OF TUBERCULOSIS
IN COTE D'IVOIRE PRISONS**

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Abbreviations

ARV :	Antiretroviral
DOT :	Directly observed therapy
DSC :	Designated screening centres
HIV :	Human immunodeficiency virus
INH :	Isoniazide
IEC :	Information, education, communication
IEC TMR :	Information, education, communication Training and Mobility of Researchers
IUATLD :	International Union Against Tuberculosis and Lung Disease
MACA:	Maison d'Arrêt et de Correction d'Abidjan
MDR-TB :	Multidrug-resistant tuberculosis
MSF :	Médecins Sans Frontières
NGO :	Non-governmental organization
NPFT	National program for the fight against tuberculosis
PITC :	Provider initiated testing and counseling
PNPEC :	National Care and Treatment Programme for HIV/AIDS
PPD:	Purified protein derivative
PPM :	Pharmacy preparer-manager
TB :	Tuberculosis
TC :	Treatment Centre
XDR :	Extensively Drug-Resistant

PROPOSAL FOR A STRATEGIC PLAN AND OPERATIONAL ASPECTS FOR THE CONTROL OF TUBERCULOSIS IN COTE D'IVOIRE PRISONS

The status of tuberculosis (*TB*) in Ivoirian prisons is a major public health problem. It is for this reason that an emergency plan has been developed which must be implemented without waiting for validation of the strategic plan proposed here. Following this **strategic plan**, there are operational proposals which should enable its implementation by adapting to the characteristics of each prison (in particular, the number of prisoners, infrastructure and geographic location).

EMERGENCY PLAN

- Evaluate the **prevalence of TB** and that of resistance to anti-TB medications at Maison d'arrêt et de Correction d'Abidjan (*MACA*) Prison in order to make the problem of TB in prisons visible.
- Reinforce, at all levels (national, regional and in the districts) the framework of **collaboration between health and justice**.
- Make **health personnel**, according to the number of prisoners, available at each prison (at least a nurse and a doctor).
- Create **operational links between the prison, the local hospital and the health district**.
- In relations with the hospital and the district, locally **set up free diagnosis and treatment of TB** in each prison in order to avoid the almost systematic transfer of prisoners with TB to MACA.
- Set up a **systematic medical examination when prisoners arrive** at the prison which includes information, education, communication (*IEC*) and active screening for TB and Human Immunodeficiency Virus (*HIV*).
- For prisoners already in prison, in **routine consultations**, include HIV provider initiated testing and counseling (*PITC*) and investigate for TB symptoms (in particular coughing for more than 3 weeks).
- Reinforce passive screening of TB in each prison through IEC actions, the providing of equipment to collect sputum and the creation of links with a local diagnostic laboratory.

STRATEGIC PLAN

Introduction

Prison sentences must not deprive prisoners of the right to health according to international legislation (1, 2). This is especially the case for infectious diseases that are particularly frequent in prisons given the overpopulation of prisons that affects most countries (3).

TB is a public health problem in prisons on a world scale including industrialised countries, but this is obviously all the more the case in countries with low or medium incomes where TB is particularly frequent (4, 5, 6) with a risk of spreading to the general population from their prisons (7).

The setting up and implementation of a national programme concerning health in prisons (especially TB) requires the joint involvement of the Ministries of Health and Justice. The responsibility for this programme should preferably be in the hands of the Ministry of Health with the Ministry of Justice as a health reference.

As for health personnel, there must be at least one full-time nurse assigned to each prison. As an indication, it would be desirable to have for 500 prisoners a team with 1 doctor and 2 nurses according to the Brazilian Ministry of Health (8). The status of these personnel is currently extremely variable and should be standardized to ensure better management of human resources.

Abidjan Prison (MACA), with 5,069 out of a total of 11,655 prisoners in Côte d'Ivoire in January 2009 (9), has Treatment Centre (*TC*) status. MACA is currently the national reference prison in terms of treatment of complex TB cases, in particular, resistant cases. In addition, it receives prisoners with TB with no particular problems who are transferred from other prisons in the country – thereby overloading its infirmary. Consequently, one of the objectives of this strategic plan is to promote a decentralisation of TB treatment to prisons that are the farthest away from the capital and the most deprived in the country.

Moreover, a proposal has been made to create, in addition to the MACA TC, several CTs in large prisons throughout the country – prisons that will be reference sites for resistant cases (they could be, for example, the prisons of Daloa, Bouaké, Korhogo, Dimbokro). These prisons should have, like MACA, isolation cells for resistant cases, medical and paramedical personnel on duty and a bacilloscopy laboratory.

Within this framework of decentralisation planned on a regional scale, the MACA would become a sort of "National Reference Centre for TB in Prisons" for complex cases with, at the same time, a decrease in the number of prisoners with TB transferred from other prisons in the country.

1. Tuberculosis in prisons: a major Public Health problem for prisoners and their contacts

1.1. Epidemiological situation

TB is a major problem in prisons (6, 10, 11) in developing countries – all highly endemic. This is the case in Côte d'Ivoire as seen in former data collected during the Médecin Sans Frontières (*MSF*) programme at MACA where 85 patients were monitored in March 2003 (including 19 with second-line treatment) (12). Radiologic screening performed in 1997 for 1,861 prisoners in Bouake over a period of 2 years made it possible to identify 108 cases of bacillary pulmonary TB (5.8%) (13).

These data are in contrast with recent monitoring data from the National Programme for the Fight against Tuberculosis (*NPFT*) (14) which reported only 124 cases in 2008 in all the prisons in the country including 68 in MACA and 50 in Daloa (1,085 prisoners), which leaves no doubt that there is a major problem of under-diagnosis and under-reporting of cases owing to conditions in prisons, treatment and, no doubt, the prevalence of HIV in prisons – all of which have not improved.

The prevalence of HIV in prisoners with TB was only evaluated at MACA where it was 28.8% in June 2009 whereas in the population of this prison, the prevalence is 6.3% (15) versus 3.9% in the young adult population of the country (16).

While national surveys estimated the prevalence of Multidrug Resistant-Tuberculosis (*MDR-TB*) in the general population at 5.3% in 1996 (17) and at 2.5% in 2006 (18), this prevalence is not known in prisons. However, various studies have reported that the prevalence of MDR-TB is generally, in a given country, particularly high in the prison population (6, 19).

The partial character of the currently available data concerning the frequency of TB and TB/HIV co-infections in Ivoirian prisons implies the implementation, at least at MACA of:

- a transversal study by active screening enabling evaluation of the prevalence of both TB and HIV and research for associated risk factors.
- an evaluation of the frequency of resistance to anti-TB medications by sequential study of routinely identified cases of TB.

Numerous favourable factors for the occurrence of TB are present in Ivoirian prisons:

- The prisons are overpopulated (to avoid only citing MACA, in the prisons of Dabou and Sassandra, each prisoner only has 0.7 m² of space in his cell).
- Ventilation is almost inexistent in cells where prisoners are locked up all night.
- The prevalence of HIV (at least at MACA) is higher than in the general population.
- Cases of malnutrition are frequent with insufficient daily requirements.
- Prisoners generally come from underprivileged communities where TB is particularly frequent.
- A high percentage of prisoners have previously been in prison and previous histories of TB are frequent.
- The majority of prisoners are young and male (age and sex brackets where the frequency of TB is the highest).

2. Controlling TB in people who have lost their liberty: simple principles but complex implementation

2.1. Key actions

Early identification of cases and their treatment are the most effective means to prevent the transmission of TB, particularly in prisons. Detection and treatment of TB must, in this environment, rely on the measures recommended by the NPFT (20) – measures that must be adapted to the specificities of prisons with, in particular, systematic active screening (21, 22).

Direct access to care and treatment must be guaranteed for each prisoner and must not depend, in any way, on the prisoners or on courtyard, floor or cell chiefs. Health personnel must be able to have direct contact with the prisoners and for that, be able to regularly enter cells.

It is imperative that the TB diagnostic, treatment and monitoring procedures implemented in prisons be entirely free of charge during imprisonment and after for patients still under treatment.

2.1.1. Screening

a) Screening on demand

Screening must be the minimal base of a programme to fight TB in prisons, which implies:

- making prisoners and other members of the prison community (particularly the guards) aware of the gravity of TB, of the importance of early detection of cases and the meaning of a cough that has lasted more than 3 weeks,
- facilitate with, in particular, the guards, prisoner access to the prison infirmary,
- do whatever is necessary to ensure that other prisoners, and especially their leaders, cannot intervene to limit access to care.
- provide the prison infirmary with the equipment necessary (spittoons...) to collect sputum,
- define the procedures for sending sputum to the local laboratory and receiving the results as soon as possible (cf. appendix, operational aspects).

Health personnel must systematically ask a prisoner who comes to the infirmary for a consultation if he has been coughing for more than 3 weeks, whatever the reason for his consultation.

b) Active screening

Screening on demand alone is not enough to reduce the incidence of TB (22, 23). Active screening is therefore indispensable. It consists in identifying prisoners with suspected TB who will then benefit from bacteriologic examination of sputum. Such screening can be performed by two methods:

- Questioning each prisoner to find out if he has been coughing for over 3 weeks (the simplest and least expensive method but the least reliable (22, 24).
- Thoracic x-ray of each prisoner, whether he presents symptoms or not, to explore for radiologic anomalies (11, 25).

Given the presumed high prevalence of TB in the prison populations of Côte d'Ivoire, Purified Protein Derivative (*PPD*) is not practical as a screening method.

Systematic active screening for TB of prisoners entering prison must necessarily be part of the health examination that all entering prisoners must have in accordance with international guidelines (2, 22).

It must be associated with **periodic mass active screening** every 6 months.

Active screening must always be accompanied by actions that promote prisoner awareness, particularly during the entrance examination.

In a given prison, contacts among prisoners are very close owing to prison conditions with a great number of prisoners living together in cells and cramped courtyards. In this context, detection of TB requires systematic active screening.

2.1.2. Treatment

Anti-TB treatment should be administered immediately after the diagnosis and in all cases, prescribed by a doctor. This means having a reference doctor in each prison and a system that ensures the availability of medications from health services outside of the prison.

Treatment must be directly supervised (20, 21). The Directly Observed Therapy (*DOT*) principle is only a potential benefit for the patient if the person who supervises the daily administration of medications is a health worker or at least someone who derives no direct or indirect benefit from this supervision. It can in no case be another prisoner or a guard.

In order to ensure regular treatment, the patient must be able to have daily access to the health service to take his treatment, undergo bacilloscopies at 2, 4 and 6 months, monthly monitoring of weight as well as a counselling consultation to ensure adherence to treatment.

Procedures will be set up to ensure the continuity of treatment in case of transfer to another prison and in case of release from prison (cf. appendix "operational aspects").

2.1.3. Early diagnosis of resistance

Given the supposed high frequency of resistance in prisons (6), cultures and sensitivity tests will be performed free of charge on new samples in the following cases:

- Retreatment (failures, recurrences and continuation of TB)
- Positive bacilloscopy after 2 months of treatment

MDR-TB frequency is linked to poor adherence to treatment and late detection in the cases of mono-resistance.

In order to avoid the appearance of extensively drug resistant (*XDR*) strains, the use of quinolones, which are fundamental in the treatment of MDR, must be avoided for all non-TB indications, particularly in prisons.

2.1.4. Diagnosis of TB/HIV co-infection

Diagnosis of HIV in prisoners with TB

When a TB patient has been detected, he must be informed so that TB is included in HIV counselling/screening performed by the prison administration. Rapid finger tests from a sample taken from the finger tip must be made available in all of the prisons. Large prisons, in particular MACA, will have access to two types of tests (the rapid finger test and the conventional serology test from a blood sample taken from the inside of the elbow).

The personnel of each hospital must be trained by the National Care and Treatment Program for HIV/AIDS (*PNPEC*) in pre and post-test counselling and in the performance of rapid tests for HIV.

Diagnosis of TB in prisoners with HIV

In patients who are HIV+ (particularly on the examination performed when a prisoner enters the prison), systematic TB screening by biological examination of sputum must be performed (whether there are symptoms or not) and whenever possible by pulmonary radiology.

Any patient with TB/HIV+ co-infection must systematically benefit from primary opportunistic infection prophylaxis with Cotrimoxazole which will be started by all care personnel as soon as the patient has been declared HIV seropositive. Sampling for an initial HIV work-up will be performed on site and sent to a reference laboratory.

Co-infected prisoners must benefit from the services of a reference doctor for initiation of antiretroviral (*ARV*) treatment according to national recommendations.

2.1.5. Isolation of cases

Given the fact that:

- in the weeks preceding the diagnosis, the people in contact with the patient will have already been sufficiently exposed to the risk of infection and
- the contagiousness of the patient will rapidly diminish in the first few days of treatment,

Isolation of TB patients already imprisoned would provide no benefit. In addition, it contributes to the stigmatisation of the patient and tends to discourage symptomatic subjects from going to the health service.

On the other hand, isolation is essential for:

- Prisoners with TB identified on the prison entrance examination.
- During the first 15 days of their treatment.
- Prisoners with TB on entrance with fewer than 15 days of treatment.
- Patients with suspected resistance.
- Patients receiving second-line treatment until a negative bacilloscopy.

2.2. Diagnostic methods

2.2.1. Bacteriologic diagnosis

Sputum collection

For all suspected cases of TB, 3 sputum samples must be taken. Sputum collection must be supervised by a health professional. When collection cannot be made from a fasting patient (this is always the case for the first collection which must be performed during the first consultation), collection will be carried out at any time of day.

This collection must never be performed inside the cells but rather in open air or in an appropriate room in the health service that is as well ventilated as possible. The quality of the collected material must be verified by the health personnel. Samples are to be transported to the laboratory on the same day or, if this is impossible, preserved in a refrigerator before being transported as soon as possible.

Microscopic examination

The laboratory that carries out the exam must meet national norms in terms of quality control. The results must be provided within 24 hours. The prison origin of the sample must be stated in the laboratory register ("address" column).

The reference laboratory must answer to prison requests for specimen containers. They must always be available in the prison infirmary.

The laboratory must perform all of the exams requested by prison health personnel as soon as possible, even if demand is increasing within the framework of routine diagnostics or active screening which implies prior prison/laboratory cooperation.

Culture

In addition to the cases of suspected resistance (cf. paragraph 2.1.3.), cultures must be carried out for patients presenting suspected TB but whose bacilloscopies were negative.

2.2.2. Thoracic radiography

In prison, a thoracic x-ray can be used, if necessary, as a method of diagnostic support or within the framework of systematic active screening on arrival and for periodic mass screening. This examination will be free of charge in all cases.

This radiography will be prescribed by a doctor by necessity in case of persistence of strong clinical suspicion despite three negative sputum examinations (this is particularly frequent in people who are seropositive for HIV).

As for active screening, thoracic radiography will in no case be considered as a diagnostic method and will be followed, in patients presenting a pulmonary, pleural or ganglionic anomaly, bacteriologic examinations that conform to the guidelines listed above (11, 25).

2.3. Information, Education, Communication

The aim of IEC is to:

- make it understood that TB is a grave, frequent, contagious but curable illness that concerns everyone in the prison (prisoners, guards, families and visitors, educators, health personnel, etc.) as well as the community where the patient will reintegrate after release.
- motivate individuals to undergo early screening as soon as the first symptoms appear.
- reduce stigmatization.
- facilitate early access to the health service in order to reduce the incidence, the gravity of TB and the associated mortality.
- motivate patients to properly adhere to their treatment without interruption until its completion in order to break the chain of TB transmission and prevent the emergence of resistances.

Education in terms of TB must imperatively show the narrowness of the link between TB and HIV infection and therefore integrate the prevention and counselling/screening of HIV with a view to comprehensive treatment and care.

IEC is intended not only for prisoners and health personnel, but also for guards, educators, families and visitors, preachers, etc. with strategies that adapted to each of these targets.

IEC strategies within the framework of actions to control TB in prisons

Targets	Possible strategies	Competences required
Prisoners	<ul style="list-style-type: none"> • Support groups who talk to prisoners on entry/awareness • Group activities with patients • Mobilisation of former patients and health personnel to help spread information on TB and HIV to the cells • Training peer educators in TB and HIV 	<ul style="list-style-type: none"> • Be capable of recognizing the symptoms of TB and in case those symptoms are present, of going to the prison health service • Know how HIV is transmitted, the measures to prevent HIV transmission and the importance of screening • Promote adherence to treatment for TB patients
Guards	<ul style="list-style-type: none"> • Organisation of exchanges during meals (cooperation) • TB and HIV training during basic training to become a guard 	<ul style="list-style-type: none"> • Be able to orient suspected cases of TB and facilitate access to treatment for them. Be conscious of the importance of this role. • Motivate prisoners to submit to HIV screening • Be conscious that one's own protection is increased by the detection and treatment of cases of TB among the prisoners
Health professionals	<ul style="list-style-type: none"> • Reinforce the capacities of health personnel in terms of TB and HIV in designated screening centres (<i>DSC</i>) • Creation of the framework for sharing experience • Participation in results workshops on TB and in other workshops to elaborate policies and strategies • Integration of the daily activities of HIV counselling/screening initiated by the health provider 	<ul style="list-style-type: none"> • Be capable of establishing a clinical and bacteriological diagnosis of TB, providing the patient with treatment and ensuring his monitoring • Know how to recognize early possible cases of resistance and implement the means for diagnosis and treatment of these cases • Be capable of performing active screening of new prisoners and periodic mass screening • Ensure access to medications and adherence to treatment
Specialised educators	<ul style="list-style-type: none"> • Training for TB and HIV in DSC • Participation in support discussion groups with prisoners • Training for leading these groups 	<ul style="list-style-type: none"> • Know the means of contamination / prevention / treatment of TB • Acquire the ability to motivate prisoners to be screened for HIV and TB • Acquire the know-how to accompany prisoners who are minors and under TB and/or HIV treatment
Religious leaders and associations	<ul style="list-style-type: none"> • Training/awareness 	<ul style="list-style-type: none"> • Be able to make one's community aware of TB, how to recognize suspected cases and promote adherence to treatment • Be able to make people aware of HIV prevention and screening • Contribute to ensuring the continuity of TB

		and HIV treatment and their monitoring after discharge from prison and each time that is necessary
Visitors/families	<ul style="list-style-type: none"> Awareness of TB during visits 	<ul style="list-style-type: none"> Be able to suspect TB and encourage prisoners with suspected cases to go to the prison health service Be able to observe and make people aware of the observance of hygienic measures intended to reduce the transmission of TB Encourage the families of prisoners with TB to be screened at their health centres Promote adherence to treatment by prisoners with TB and/or HIV Promote the continuation of treatment each time it is required when a prisoner is discharged from prison

Educational materials (slide shows, posters, folders, videos...) will be adapted to each of the above targets.

3. Epidemiologic monitoring, monitoring and evaluation of the programme

3.1. Epidemiologic monitoring

Given the sectional character of epidemiologic data concerning TB in prisons, it is important to be able, through the NPFT network of epidemiologic monitoring, to evaluate the contribution of TB in prisons to the number of cases of TB in the entire country and have the data from the beginning in order to evaluate the efficacy of the implementation strategies.

In order to do this, prison health services will integrate the NPFT monitoring system by using the same management tools as the other TB treatment and care structures. This will also be the case for the monitoring of resistances.

3.2. Monitoring and evaluation of the TB programme in prisons

In order to monitor and evaluate a TB control programme that is adapted to prisons, the indicators and objectives will be defined concerning, in particular:

- passive screening,
- active screening (screening on admission to the prison and mass screening),
- early screening of resistances,
- IEC activities,
- monitoring of discharged patients who are still on treatment.

A special supervision form will be drawn up for prisons. This supervision will concern all of the prisons including those which are not yet treatment centres. Supervision will be jointly ensured on a local and central basis.

4. Conditions of imprisonment

Improving conditions in prisons is an integral part of the fight against TB given the great overpopulation of Ivoirian prisons and the architectural characteristics of the premises. Each prisoner only has 0.70 m² of living space.

Prison architecture is certainly something that needs to be reconsidered with much larger premises (cells, courtyards) that are better ventilated and lit – thereby drastically reducing the number of prisoners per cell.

Undernourishment is a great problem with a daily calorie intake at MACA of 1,000 calories and major vitamin deficiencies as reported by MSF evaluations in 2002-2003 (11) and the occurrence during the same period of an epidemic of beriberi (26). This situation, which appears to be continuing, is a factor that favours the development of infectious diseases in general and TB in particular. Rectification of this situation would contribute to the control of TB.

5. Biosafety

Collective protection measures

Ultimately, the most important measures to ensure biosafety for both prisoners and personnel are early screening and treatment of TB cases and improvement of imprisonment conditions (cf. Chapter 4).

Basic measures (putting one's hand or a handkerchief over one's mouth when coughing, not spitting on the ground) must be repeated with insistence. Isolation must be limited to the cases mentioned in Chapter 2.1.5.

Restructuration of health services is essential to:

- create real reception spaces for patients with hospitalization and isolation rooms in the largest prisons and in other prisons, infirmaries with at minimum a space for consultations, a room reserved for sputum collection and a stock of medications and equipment.
- answer to biosafety norms with consultation offices and well-ventilated hospitalization spaces and where there is sufficient sunlight.
- define the place and procedures for sputum collection in order to diminish the risks of contamination for personnel and other prisoners (cf. Chapter 2.2.1).

The **laboratory** and the procedures performed in it must conform to the norms defined by the International Union Against Tuberculosis and Lung Disease (IUATLD) (27).

Routing of patients through treatment and care structures

Given the particular risks of TB for subjects with HIV, it is important to organise the operations of health services so that TB or suspected TB patients do not meet HIV+ patients.

Measures for individual protection

These measures are the last line of defence and only ensure limited protection if the measures cited above are not implemented (22).

They must only concern patients presenting (or suspected of presenting) MDR-TB during their transfer from isolation and the personnel in contact with them. For these patients, it is a question of preventing the emission of contaminating sprays and consequently, the use of a surgical mask which acts as a physical barrier is sufficient. On the other hand, for personnel, the wearing of filtering mask FFP2 is indicated.

6. Occupational medicine

Guards, health personnel and other personnel in contact with prisoners (teachers, social workers...) must benefit from **occupational medicine**. Considering that these personnel are, like the prisoners, exposed to a high risk of TB, they must undergo free of charge:

- an examination at the beginning of their jobs in the prison (PPD and pulmonary radiography).
- an annual examination (PPD for personnel with a negative PPD and for everyone, pulmonary radiography).
- chemio-prophylaxis by 6 months of isoniazide (*INH*) for personnel whose PPD was positive, after exclusion of an active TB diagnosis.
- the usual bacteriologic examination in personnel presenting a radiologic anomaly.

Moreover, personnel will be able to consult free of charge in prison health structures or in reference structures in case of symptoms that suggest TB.

OPÉRATIONAL ASPECTS: IMPLEMENTATION OF A STRATEGIC PLAN TO CONTROL TB ACCORDING TO THE POPULATION OF THE PRISON

A. Large prisons (more than 1,500 prisoners)

- Currently, there is only 1 large prison in Côte d'Ivoire, MACA Prison, whose health services need an x-ray machine, a pharmacy preparer-manager (*PPM*), a laboratory technician, a microscopy laboratory, which will be connected with a reference laboratory for cultures and sensitivity tests. In the pyramidal structure to fight TB in CI, the MACA infirmary is a TC with a place to isolate patients with suspected resistance.
- MACA Prison must have full-time medical and paramedical personnel (nurses, laboratory technicians).
- It must use the same management tools as other TC.

Passive screening

- The prison health service will perform sputum collections of suspected cases (supervised by a nurse).
- Bacilloscopy will be performed in the TC laboratory of the prison.
- In positive cases, weighing the patient and the HIV test will be carried out on site.
- The TC notification register will be properly filled out.

Active screening

For all **new prisoners**:

- A pulmonary radiography will be performed during the first week following arrival.
- For prisoners with an abnormal image (pleural, ganglionic or parenchymal anomaly), 3 sputum samples will be collected.
- An initial IEC group session on health will meet and, in particular, discuss TB and HIV infection.

For subjects already imprisoned:

- Once every 6 months active screening for TB will be performed by a nurse who systematically and individually asks everyone in the prison about coughing. Three sputum samples will be collected from prisoners who have been coughing for at least 3 weeks.

Treatment

- Treatment will be supervised on a daily basis by a nurse.
- A treatment monitoring register proper to the prison will be created and kept up to date.
- Monitoring of sputum and weight will be carried out according to NPFT guidelines.
- Isolation of cases being treated will not be necessary (cf. Chapter 2.1.5. of the strategic plan) except for new arrivals and subjects with suspected resistance.
- All management tools (treatment card, notification of cases registry, laboratory registry, monitoring registry, reference/transfer registry) will be kept up to date.
- The coordination zone TC will ensure quarterly supervision of anti-TB activity.

Monitoring

- Prisons will be equipped with all NPFT management tools: individual patient file, sputum request form, transfer file, reference and counter-reference forms, treatment card, declaration of case registry (burgundy), laboratory registry (green) and pharmacy registry (blue) which will be kept up to date, quarterly report files (screening section and monitoring section).

It should be noted that a TB patient will have 3 treatment cards: 1 card will permanently remain in the TC, 1 in the infirmary and 1 with the TB patient. If necessary, the latter card will be presented by the patient to the TC of his place of residence for treatment after his release from prison.

- A prisoner leaves the prison cured of TB: in this case, he is released with his treatment card updated by a nurse.
- A prisoner under treatment is transferred to another prison:
 - He must present his treatment card at the infirmary in the new prison.
 - The nurse from the original prison will inform the nurse in the new prison of the arrival of a prisoner with TB by means of a prison nurse directory (directory to be drawn up).
 - The nurse from the original prison will forward the prisoner's transfer file.
 - The nurse in the new prison will inform his or her reference TC.
 - Each nurse will have a directory of prison nurses and TC in the country for each of these services and the name, address and phone number of the reference person as well as the address of the NPFT "prison" focal point.
- A prisoner under treatment is released:
 - All prisoners with TB will receive, from the beginning of treatment, information on the importance of adherence to treatment and monitoring, in particular after release.
 - The prisoner must always have his treatment card on him in order to present it after his release to the TC in his place of residence.
 - Request, beginning with imprisonment, the implication of Non-Governmental Organization (NGO) which, after the release of a patient under treatment, will help him find treatment and care structures. If there is no NGO, the continuation of treatment will depend uniquely on the IEC received during his imprisonment.
 - In all cases, contact will be made with one of the patient's family members to accompany him after release.

B. Medium-sized prisons (400 to 1,500 prisoners)

- There are currently five.
- Their organisation should be as close as possible to that of the large prisons.
- Given the high rate of morbidity in prisons, they must have a minimum level of manpower including a doctor, a PPM, a laboratory technician and a full-time nurse.
- Systematic screening for TB on entry will be based on cough for over 3 weeks if radiography is not available.
- All of the management tools: treatment card, declaration of case registry (burgundy) if they have a laboratory or a monitoring registry (orange) if there is no laboratory. These registries must be kept up to date.
- These prisons will use the following NPFT management tools:
 - **If they have a laboratory:**
A copy of the patient's file, sputum request forms, transfer form, reference and counter-reference forms, treatment card, declaration of case registry (burgundy), laboratory registry (green) and pharmacy registry (blue) which must be kept up to date, quarterly report files (screening section and monitoring section).
 - **If they do not have a laboratory:**
Liaison notebook, a copy of the patient's file, sputum request forms, transfer form, reference and counter-reference forms, treatment card, declaration of case registry (burgundy) and pharmacy registry (blue) which must be kept up to date, quarterly report files (screening section and monitoring section).

Detection, treatment and monitoring of patients will be performed as previously described for large prisons or as described for small prisons (cf. below) depending on the infrastructure available (on-site laboratory, doctor, radiography).

C. Small prisons (fewer than 400 prisoners)

- There are 16.
- The presence of a full-time nurse is indispensable. He or she must be trained for IEC activities, screening and treatment monitoring.

Passive screening

- The nurse will collect sputum from suspected cases.
- He or she will send the sputum to the reference TC after telephone contact.
- Prison-TC by the TC motorcycle (for example). The results will return in 24/48 hours by the same transport system.
- For positive cases, the patient's weight and blood samples for HIV serology will be sent to the TC which will prescribe medication so that the patient does not have to travel.

Active screening

- 3 sputum collections are carried out:
 - For all new prisoners presenting cough > 3 weeks or who have a history of anti-TB treatment or who are HIV+.
 - A first group IEC session will take place in which health will be discussed, in particular, TB and HIV infection.
 - For subjects who are already imprisoned: active screening for TB once every 6 months. The nurse will systematically ask each prisoner if he has a cough and if yes, for how long.

Treatment

- Treatment will be prescribed by the reference doctor and monitored by the prison nurse.
- A treatment monitoring log proper to the prison will be set up.
- Treatment will be supervised on a daily basis by the nurse.
- Isolation of cases being treated will not be necessary (cf. Chapter 2.1.5. of the strategic plan) except for new arrivals and subjects with suspected resistance.

Monitoring

Patient monitoring will be carried out as previously described for large prisons with a few particularities:

- Sputum controls and monitoring of weight will be carried out according to NPFT guidelines. The transport of sputum will be done in the same manner as for screening.
- The TC will send the final treatment evaluation to the prison nurse.
- All of the management tools: treatment card, monitoring registry (orange) must be kept up to date.
- A prisoner under retreatment will be transferred to the regional reference prison.
- These prisons will have the following NPFT management tools: liaison notebook, a copy of the patient's file, sputum request forms, transfer form, reference and counter-reference forms, treatment card and pharmacy registry (blue) which must be kept up to date, quarterly report files (screening section and monitoring section).

Bibliographie

1. Organisation des Nations Unies. Déclaration Universelle des Droits de l'Homme, Genève, 1948, <http://www.ohchr.org/EN/UDHR/Pages/Introduction.aspx>
2. Organization of United Nations. Body of Principles for the Protection of All Persons under Any Form of Detention or Imprisonment. Resolution of the General Assembly 43/173, December 9, 1988, <http://www.un.org/documents/ga/res/43/a43r173.htm>
3. International Centre for Prisons Studies, King College, London. World Prison Brief. <http://www.kcl.ac.uk/depsta/law/research/icps/worldbrief/>
4. Coninx R, Maher D, Reyes H, Grzemska M. Tuberculosis in prisons in countries with high prevalence. *BMJ* 2000; 320: 440-442.
5. Larouze B, Sanchez A, Diuana V. Tuberculosis behind bars in developing countries: a hidden shame to public health. *Trans Roy Soc Trop Med Hyg* 2008; 102:841-842.
6. World Health Organization. Literature review on tuberculosis in prisons. http://www.who.int/tb/challenges/prisons/tb_in_prisons_lit_review_10feb08.pdf
7. Rasolofo-Razanamparany V., Menard D., Ratsitorahina M., Auregan G., Gicquel B. & Chanteau S. Transmission of tuberculosis in the prison of Antananarivo (Madagascar). *Res Microbiol*, 2000;151:785-95.
8. Portaria Interministerial n°1.777. Institui o Plano Nacional de Saúde no Sistema Penitenciário. *Diário Oficial da União* 2003; 9 setembro.
9. Source : Direction de l'Administration Pénitentiaire, Ministère ivoirien de la Justice, 2009
10. Nyangulu D S, Harries A D, Kang'ombe C, Yadidi A E, Chokani K, Cullinam T, Maher D, Nunn P, Salaniponi F M. Tuberculosis in a prison population in Malawi. *Lancet* 1997; 350:1284-7.
11. Sanchez A, Gerhardt G, Natal S, Capone D, Espinola AB, Costa W, Pires J, Barreto A, Biondi E, Larouze B. Prevalence of pulmonary tuberculosis and comparative evaluation of screening strategies in a Brazilian prison. *Int J Tuberc Lung Dis* 2005;9:633-39
12. Médecins Sans Frontières. Programme MACA. Rapport d'activité interne, mars 2003.
13. Koffi N, Ngom NK, Aka-Danguy E, Séka A, Kouassi N, Fadiga F. La tuberculose pulmonaire bacillifère en milieu carcéral : notre expérience au camp pénal de Bouaké. *Int J Tuberc Lung Dis* 1997; 1:250-3.
14. Programme National de Lutte contre la Tuberculose. Rapport Annuel sur le Dépistage des Tuberculeux. Ministère de la Santé de Côte d'Ivoire, 2008.
15. ESTHER. Programme MACA, Rapport du Point Focal V.Febro, Juin 2009.
16. ONUSIDA. Prévalence du VIH en Côte d'Ivoire, Rapport 2008, http://www.unaids.org/fr/CountryResponses/Countries/ivory_coast.

17. Amor BY, Nemser B, Singh A, Sankin A, Schluger N. Underreported threat of multidrug-resistant tuberculosis in Africa. *Emerging Infectious Diseases*. 2008; 14:1345-52.
18. N'Guessan, KR, Nahoua I, Dosso M. Rapport du Etude de la pharmaco-résistance du bacille tuberculeux chez les nouveaux cas de tuberculose pulmonaire en Côte d'Ivoire : enquête nationale 2005-2006. Ministère de l'Enseignement Supérieur et de la Recherche Scientifique, Institut Pasteur de Côte d'Ivoire. 2006.
19. Habeenzu C, Mitarai S, Lubasi D, Mudenda V, Kantenga T, Mwansa J, Maslow JN. Tuberculosis and multidrug resistance in Zambian prisons 2000-2001. *Int J Tub Lung Dis*. 2007; 11:1216-20.
20. Programme National de Lutte Contre la Tuberculose. Guide technique de la Tuberculose, seconde Edition, 2005
21. World Health Organization. Tuberculosis control in prisons. A manual for programme managers. Geneva: WHO, 2000.
22. Prevention and control of tuberculosis in correctional and detention facilities: recommendations from CDC. Endorsed by the Advisory Council for the Elimination of Tuberculosis, the National Commission on Correctional Health Care, and the American Correctional Association. *MMWR Recomm Rep*. 2006 Jul 7;55 (RR-9):1-44.
23. Legrand J, Sanchez A, Le Pont F, Camacho L, Larouze B. Modeling the Impact of Tuberculosis Control Strategies in Highly Endemic Overcrowded Prisons. *PLoS One* 2008; <http://www.plosone.org/doi/pone.0002100>
24. Fournet N, Sanchez A, Massari V, Penna L, Natal S, Biondi E, Larouze B. Development and evaluation of tuberculosis screening scores in Brazilian prisons. *Public Health* 2006;120:976-983
25. den Boon S, White NW, van Lill SW, Borgdorff MW, Verver S, Lombard CJ, Bateman ED, Irusen E, Enarson DA, Beyers N. An evaluation of symptom and chest radiographic screening in tuberculosis prevalence surveys. *Int J Tuberc Lung Dis* 2006; 10: 876-82.
26. Ahoua L, Etienne W, Fermon F, Godain G, Brown V, Kadjo K, Bouaffou K, Legros D, Guerin PJ. Outbreak of beriberi in a prison in Côte d'Ivoire. *Food Nutr Bull*. 2007; 28:283-90.
27. UICTMR. Manuel « Priorités pour les services de bactériologie de la tuberculose dans les pays à faible revenus », UICTMR, PARIS, 2007.