

Iraq National Tuberculosis Control Program

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Study Title:

**Active Case Findings of Household
Contacts of Sputum Smear Positive TB
Case in Baghdad, 2013**

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Summary

Introduction: Good TB treatment success rates have been achieved under DOTS, low case detection rates remain an obstacle to the long-term success of TB control programs. Current World Health Organization policy emphasizes passive case finding in contrast with the identification of cases through screening. Iraq is a country endemic with tuberculosis. It is estimated in 2013 to have an incidence rate of 45/100,000 for new cases of TB and a prevalence of 73/100,000. Still Iraq did not achieve global target of cases detection (70%) as detected only 59% of new cases of 2013. This study looks for other measure than passive case detection to foster early case detection, further protect the community and increase case detection rate. This study aims at increasing case detection rate of TB cases. Objectives include: Estimate new T.B cases among household contact of T.B index case, identify T.B cases among T.B contact by age, sex & type of smear, and increase public awareness towards T.B disease.

Methods: This is a cross-sectional study targeted randomly selected households clusters at their home. Those households (clusters) were pertained to an index case (new or relapsed smear positive TB cases registered in Baghdad during the second half of 2013 from randomly selected catchment areas). Investigations included tuberculin skin testing (TST) and chest X ray (CXR). Statistical package for social sciences (SPSS v20) used to input and analyze data. Multivariate analysis used to study significant associations that are not biased with age and sex. Binary logistic analysis used for this purpose using enter model.

Results: Investigators made 125 home visits to interview household contacts of 119 smear positive pulmonary TB patients. Index cases (pulmonary TB patients) were 101 new pulmonary TB (84.9%) and 19 relapsed pulmonary TB cases. All index patients were older than 14 years. Total interviewed and evaluated contacts were 732, 670 persons pertained to new index cases (91.5%) and 62 contacts pertained to relapsed index cases (8.5%). Male to female ratio was about 1:1, contacts of productive age constituted around half the evaluated contacts (49.0%), around half the evaluated contacts (48%) were offspring of index patients. 23.9% (95%CI; 20.9%-27.0%) had positive tuberculin skin test, and 1% had chest X ray findings suggestive of TB. 557 (76.1%, 95%CI; 72.8%-79.1%) were likely to be free of LTI and TB, 173 (23.6%, 95%CI; 20.6%-26.9%) were having LTI, and only two patients (0.3%, 95%CI; 0.05%-

1.1%) diagnosed as TB cases (both were pulmonary TB cases, one of them was a default from a retreatment regimen).

Associations with the status of positive tuberculin skin test were examined with multivariate logistic regression and yielded the following significant associations: Age of index case 15-54 year, age of contact and being offspring to the index case, Illiterate, student, housewife, cigarette smoker, family size larger than 5, monthly income between ID 250,000-500,000 (US\$ 208-416), positive history for family history of TB prior to recent index case, positive history of TB, BCG, diabetes, and presence of a chronic debilitating disease.

Two contacts were found to have a pulmonary TB (one is a young male who is a default from a retreatment regimen for TB and an old women who diagnosed to have a new smear positive pulmonary TB).

Conclusion: LTI is prevalent among contacts and incidence of PTB among contacts is less than expected international figures.

List of Abbreviations

| | |
|-------------|-------------------------------------|
| DTC | District TB Coordinator |
| IPT | Isoniazid Preventing Therapy |
| LTB | Latent TB Infection |
| PHCC | Primary Health Care Center |
| PTB | Pulmonary Tuberculosis |
| TB | Tuberculosis |
| WHO | World Health Organization |

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1. Introduction

Tuberculosis (TB) is an infectious disease caused by *Mycobacterium tuberculosis*.⁽¹⁾ it is a major global health challenge, caused by bacteria spread by droplets.⁽²⁾ A third of people in the world are considered to be infected each year; about 8 to 10 million people develop active disease that leads to an increased number of deaths due to TB.⁽¹⁾ TB remains a major cause of morbidity and mortality in many countries and a significant public health problem worldwide.⁽³⁾

The global incidence of TB was estimated to be 139 cases per 100,000 in 2006. Ninety-five percent of these cases and 98 percent of TB deaths occur in developing countries, affecting mostly (75 percent) persons in the economically productive age group (15–50 years).⁽³⁾

The highest priority for tuberculosis control is the detection and cure of the infectious cases, i.e. patients with sputum smear-positive PTB.⁽⁴⁾ In 1991, WHO set targets for increasing case detection and treatment success rates to 70% and 85% and declared TB as a global emergency in 1993.⁽⁵⁾ On 13 October 2010, the Global Plan to Stop TB 2011–2015 was launched by the Stop Tuberculosis Partnership (a coalition of more than 400 organizations worldwide) with the aim of halving TB mortality and prevalence rates by 2015 compared with a 1990 baseline. One objective to achieving this aim is to ‘‘Ensure early diagnosis of all TB cases,’’⁽⁶⁾

TB Control Programs rely on passive case-finding to detect cases.⁽⁷⁾ Mostly patients are identified in high-burden countries when they visit health care facilities ('passive case finding').⁽²⁾ Passive case finding, the detection of tuberculosis (TB) cases among persons presenting to health facilities with symptoms suggestive of TB, has remained the principal public health approach for TB diagnosis. While this approach, in combination with improved treatment, has led to substantial global progress, the overall epidemiological impact has been inadequate.⁽⁸⁾

The WHO recommended intervention of Directly Observed Treatment, Short-course (DOTS) appears to have been less successful than expected in reducing the burden of

TB in some high prevalence settings.⁽⁹⁾ Passive case finding is the strategy implemented by most developing countries to detect new cases of tuberculosis (TB), but detection rates remain low.⁽¹⁰⁾

It is high time that control programs move from simple passive to a more systematic active case finding in order to accelerate TB control.⁽⁵⁾

Active case finding is an alternative strategy, although cost is a barrier to implementation.⁽¹⁰⁾ Contacts of TB patients are a high-risk group for developing TB, particularly within the first year. Children under the age of five and people living with HIV are particularly at risk.⁽¹¹⁾ Contacts of tuberculosis patients are a high-risk group for developing the disease. Investigation of contacts of patients with tuberculosis (TB) is a priority for TB control in high-income countries.⁽¹¹⁾

Actively screening contacts of people with confirmed tuberculosis may improve case detection rates and control of the disease⁽²⁾ as it reduces TB transmission.⁽¹²⁾ Systematic evaluation of people who have been exposed to potentially infectious cases of tuberculosis (TB) can be an efficient, targeted approach to intensified TB case finding that is within the purview of TB control programs.⁽¹⁴⁾ Contact investigations around tuberculosis patients enable early detection of infection and disease, and prevention of secondary tuberculosis cases.⁽¹⁵⁾ Active case finding in TB contact households should be considered to improve TB case detection in high-prevalence settings, but sensitive diagnostic tools are necessary.⁽¹⁶⁾

One strategy for enhancing DOTS is incorporating active case-finding through screening contacts of TB patients as widely used in low-prevalence settings,⁽⁹⁾ yet there is little evidence to show its effectiveness⁽¹²⁾, it may improve case detection rates and control of the disease⁽¹³⁾ but some literature state active case finding is an effective strategy for TB control and improving quality of life⁽¹⁰⁾ and is also cost-effective,^(10, 17) and some state that active case-finding activities are cost-effective only if the tuberculosis prevalence among the target population is high.⁽¹⁸⁾

Iraq is a country endemic with tuberculosis. It is estimated to have an incidence rate of 45/100,000 for new cases of TB and a prevalence of 73/100,000. Still Iraq did not achieve global target of cases detection (70%) as detected only 59% of new cases of 2013.⁽¹⁹⁾

This study looks for other measure than passive case detection to foster early case detection, farther protect the community and increase case detection rate.

Aim of the study:

Increase case detection rate of TB cases through active case finding of TB cases among contacts of known smear positive pulmonary TB patients.

Specific objectives:

2. Estimate new T.B cases among household contact of T.B index case.
3. Identify T.B cases among T.B contact by age, sex & type of smear.
4. Recognize individuals with TB disease or LTBI among the contacts of a TB patient and providing them with adequate health messages, and hence indirectly increase public awareness towards T.B disease.
5. Estimate coverage of chemoprophylaxis (Isoniazid Preventive Therapy-IPT) to under five children.
6. Estimate completeness to the full course of IPT by household contacts.

2. Subjects and Methods

Study Design: This is a cross-sectional study targeted selected households clusters at their home.

Study area/settings: Catchment areas around PHCC selected by random sampling technique (annex 1).

The districts from which the PHCC (& hence the catchment areas) selected should have a diagnostic & curative role in TB management & not only one of the primary care giving (annex 1).

Study subjects:

All the household contacts for smear positive PTB cases (new or relapsed) within selected clusters requested to be enrolled in this study. Only those who were unwilling to participate were excluded from the study.

Sample size:

To be sure the estimated sample size is sufficient to produce required significance and power, EpiInfor v.7 used to calculated sample size that can produce 80% power and 5% significance at expected proportion of 5% and it was 312, and after compensating for non-response rate of 15%, it was 360.

The data collection of this study relied about financially supported visits (through small operational research grants). Budget was available to cover 120 visits. It is estimated that Iraq family size is $6.9 \approx 7$, if we exclude the index patient, six contacts will remain to be the size of the targeted clusters. Expected sample size for this study was 720 household contacts yielding from visiting household clusters of 120 smear positive pulmonary TB (PTB) index patients.

Sampling technique:

Selected PHCCs represent the catchment areas. PHCCs enlisted in an excel frame according to each district in Baghdad (these districts have diagnostic TB coordinator units, i.e. they are able to diagnose and follow patients). Using random order of excel

one PHCC was selected from each health district. Due to high population density in Sadr districts four PHCCs were selected and for a similar reason three PHCCs were selected from Shaab district. Total number of selected PHCCs was 33.

Household clusters: the first eight patients register within the time of data collection from the catchment area, and presented to national TB control program (NTP) as a smear positive PTB (new or relapsed) considered the index case that identified the targeted households. Preliminary approval from index case is obtained prior to home visits and interview his household contacts. Contacts upon home visits were also requested to participate in the study after fully informing them about the aim of the study and required investigations. Contacts only enrolled after signing an informed consent form with is written in Arabic (annex 2) (English copy is available-annex 3).

Duration of data collection:

Interviews were conducted during the second six months (July-December) of 2013.

Data Collection:

Questionnaire: The questionnaire was structured to minimize interviewer & respondent bias. It included questions on the patient characteristic, residence characteristic, the nature of his relationship to the index case past medical & vaccination history, this part of the questionnaire filled by the trained interviewer. At last the type of procedures given to the contact case including diagnosis & treatment, this part of the questionnaire will be filled by the trained doctors in the selected centers. Questionnaire was provided in Arabic (annex 4) (English copy is available-annex 5)

Training workshop was conducted prior to data collection to ensure obtaining more reliable and least biased data (annex 6)

Interviews were followed by tuberculin testing at home and another visit to read results of this test. If it was necessary and according to NTP guidelines, those who need chest X ray and sputum examination (symptomatic contacts) referred to district TB units for further investigations.

Investigations used:

- Tuberculin Skin Test (TST): method is illustrated in annex 7.
- Chest X ray (CXR): Plane X rays for the chest using posteroanterior exposure.
- Direct Smear Microscopy (DSM) for Acid Fast Bacilli (AFB): Methods of reading and staining are illustrated at annexes 8-9.

Definitions: ⁽²⁰⁾

- Index case (index patients): The initially identified case of new or recurrent TB in a person of any age in a specific household or other comparable setting in which others may have been exposed.
- Household Contact: A person who shared the same enclosed living space for one or more nights or for frequent or extended periods during the day with the index case during the 3 months before commencement of the current treatment episode
- Contact investigation: A systematic process intended to identify previously undiagnosed cases of TB among the contacts of an index case. In some settings, the goal also includes testing for LTBI to identify possible candidates for preventive treatment. Contact investigation consists of two components: identification and prioritization, and clinical evaluation.
- Contact clinical evaluation: A systematic process for the diagnosis or exclusion of active TB among contacts. Clinical evaluation is undertaken if the results of contact identification and prioritization indicate a risk for having or developing TB. For the purposes of these recommendations, the definition of contact clinical evaluation includes, at a minimum, a more extensive assessment of symptoms compatible with TB. Additional components may include:
 - a more detailed medical history,
 - a physical examination,
 - microbiological assessment of specimens from sites of suspected involvement,
 - radiographic examinations and
 - invasive diagnostic tests.

Data management and analysis plan:

EpiInfo v 7 used to calculate sample size and Statistical package for social sciences (SPSS v20) used for data input and analysis. Discrete variables presented as numbers and percentages.

Multivariate analysis used to study significant associations that are not biased with age and sex. Binary logistic analysis used for this purpose using enter model.

Findings with P value less than 0.05 considered significant.

Ethical considerations:

Ethical approval for the study was obtained from the research ethical committee in MoH (annex 7) and all enrolled subjects signed an informed consent form after clarifying the aim of the study, required investigations and confidentiality of data.

3. Results:

Investigators made 125 home visits to interview household contacts of 119 smear positive pulmonary TB patients. Index cases (pulmonary TB patients) were 101 new pulmonary TB (84.9%) and 19 relapsed pulmonary TB cases (table 1). All index patients were older than 14 years.

Total interviewed and evaluated contacts were 732, 670 persons pertained to new index cases (91.5%) and 62 contacts pertained to relapsed index cases (8.5%). Male to female ratio was about 1:1, contacts of productive age constituted around half the evaluated contacts (49.0%), around half the evaluated contacts (48%) were offspring of index patients (table 2, figure 1).

Regarding sociodemographic characteristics of evaluated contacts: Majority were of poor education (only 4.2% had education level higher than secondary), students and housewives constituted more than half the contacts, around 74% of contacts belong to families larger than 5 persons, all these families have crowding index not exceeds 3. A considerable proportion of contacts (40.7%) belong to families with monthly income does not exceed ID 500,000 (US\$ 416). Smokers constitute 27.3% of the sample; including 13 (1.8%) contacts smoke both cigarettes and Argela (table 3).

Some (12%) of evaluated contacts belong to families with previous history of TB in the family prior to recent index case. Smaller proportion (1.9%) has previous history of TB. Majority (80.3%) have positive history of BCG immunization. Fever present in 3.8% of contacts, night sweats reported in 1.4%, 3.4% loss of weight reported in 3.1%, cough more than two weeks reported in 3.1%, around 6% were diabetic, 2.3% suffering from chronic debilitating disease, 0.8% recently used steroids or immunosuppressive therapy. 23.9% (95%CI; 20.9%-27.0%) had positive tuberculin skin test, and 1% had chest X ray findings suggestive of TB. 557 (76.1%, 95%CI; 72.8%-79.1%) were likely to be free of LTI and TB, 173 (23.6%, 95%CI; 20.6%-26.9%) were having LTI, and only two patients (0.3%, 95%CI; 0.05%-1.1%) diagnosed as TB cases (both were pulmonary TB cases, one of them was a default from a retreatment regimen) (table 4, figures 2- 4).

Table 1: Distribution of visited household clusters according to type of index PTB case and resultant positive findings for TST and for diagnosis of TB.

| District | Index PTB cases (n) | | | Positive in Contacts (n) | |
|-------------------|---------------------|------------|-----------|--------------------------|----------|
| | Total Index Case | New | Relapse | TST | TB |
| Abograib | 6 | 5 | 1 | 2 | 2 |
| Adhamia | 8 | 8 | 0 | 2 | 0 |
| Adil | 1 | 1 | 0 | 2 | 0 |
| Amil | 4 | 4 | 1 | 3 | 0 |
| Baghdad Aljadeeda | 6 | 6 | 0 | 0 | 0 |
| Baladiat | 5 | 5 | 0 | 0 | 0 |
| Dora | 4 | 2 | 2 | 0 | 0 |
| Ilam | 8 | 7 | 1 | 0 | 0 |
| Kadhmia | 8 | 6 | 2 | 2 | 0 |
| Madaen | 8 | 5 | 3 | 5 | 0 |
| Mahmodia | 3 | 2 | 1 | 2 | 0 |
| Rusafa | 4 | 3 | 1 | 0 | 0 |
| Sadr | 32 | 28 | 4 | 36 | 0 |
| Shaab | 17 | 16 | 1 | 112 | 0 |
| Tarmia | 5 | 4 | 1 | 11 | 0 |
| All | 119 | 101 | 18 | 175 | 2 |

Table 2: Personal characteristics of sampled household contacts:

| Characteristic | Category | N | % |
|-----------------------------|--------------------|-----|-------|
| Type of index patient | • New PTB | 670 | 91.5% |
| | • Relapsed PTB | 62 | 8.5% |
| Age Category of Contact (y) | • < 5 | 110 | 15.4% |
| | • 5-14 | 202 | 28.3% |
| | • 15-54 | 350 | 49.0% |
| | • > 55 | 53 | 7.4% |
| Sex of Contact | • Male | 349 | 47.7% |
| | • Female | 383 | 52.3% |
| Degree of consanguinity | • Spouse | 90 | 12.3% |
| | • Offspring | 350 | 47.8% |
| | • Father/mother | 133 | 18.2% |
| | • Resident at home | 159 | 21.7% |
| | • Guest | 0 | 0.0% |

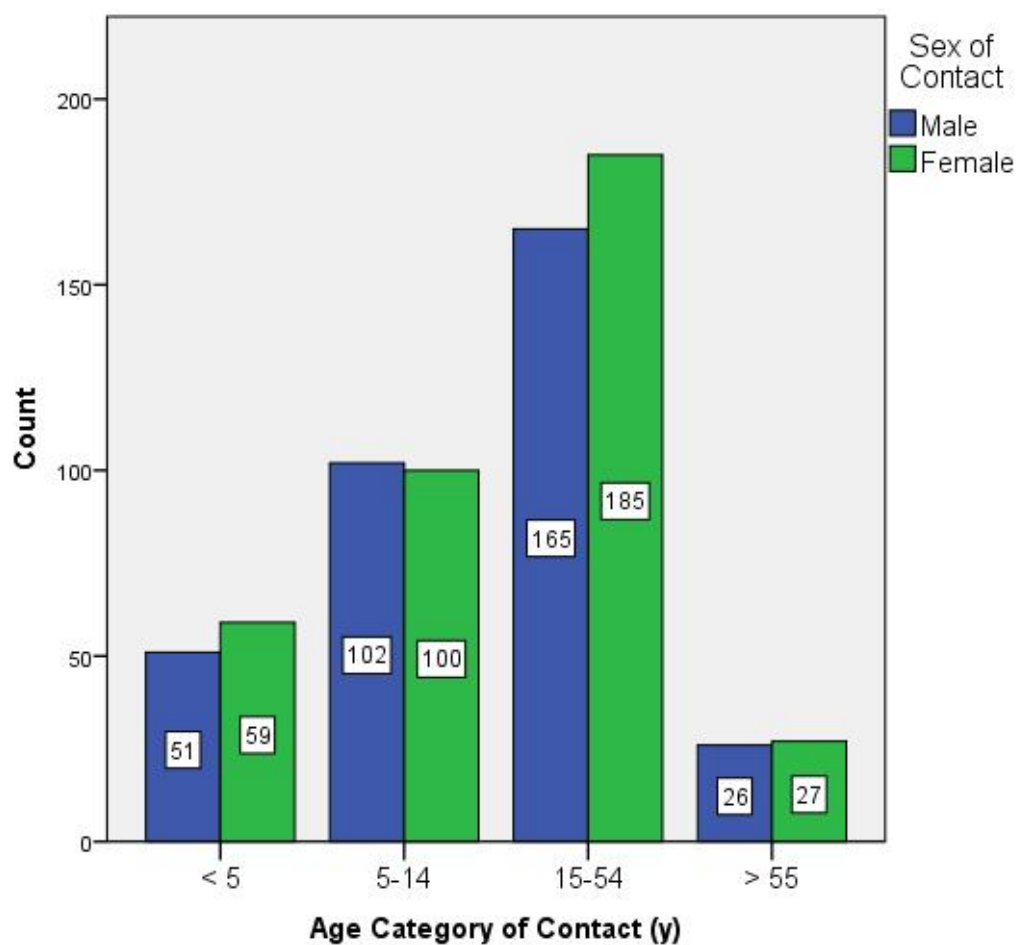


Figure 1: Distribution of visited household contacts according to age and sex.

Table 3: Socioeconomic characteristics of sampled household contacts:

| Characteristic | Category | N | % |
|--------------------------------|-------------------------|-----|--------|
| Education | • Illiterate | 215 | 29.4% |
| | • Read & write | 267 | 36.5% |
| | • Secondary | 219 | 29.9% |
| | • Higher than secondary | 31 | 4.2% |
| Occupation | • Employee | 38 | 5.2% |
| | • Skilled worker | 36 | 4.9% |
| | • Unskilled worker | 36 | 4.9% |
| | • Famer | 2 | 0.3% |
| | • Retired | 9 | 1.2% |
| | • Free work | 2 | 0.3% |
| | • Student | 215 | 29.4% |
| | • Housewife | 168 | 23.0% |
| | • Unemployed | 28 | 3.8% |
| | • Others | 198 | 27.0% |
| Category of Family Size | • Up to 5 | 189 | 25.8% |
| | • 6-10 | 292 | 39.9% |
| | • > 10 | 251 | 34.3% |
| Crowding Index Category | • Up to 3 | 479 | 100.0% |
| | • > 3 | 0 | 0.0% |
| Monthly Income (ID) | • < 250,000 | 118 | 16.2% |
| | • 250,000-500,000 | 251 | 34.5% |
| | • 501,000-1 Million | 286 | 39.3% |
| | • > 1 Million | 72 | 9.9% |
| Smoker | • Non-smoker | 532 | 72.7% |
| | • Cigarette | 187 | 25.5% |
| | • Argela | 0 | 0.0% |
| | • Both | 13 | 1.8% |

Table 4: Previous and recent medical history and clinical findings for study sample:

| Characteristic | N | % |
|---|----------|----------|
| Previous family history of TB | 88 | 12.0% |
| Previous history of TB | 14 | 1.9% |
| BCG Immunization | 588 | 80.3% |
| Fever | 28 | 3.8% |
| Night sweats | 10 | 1.4% |
| Loss of appetite | 25 | 3.4% |
| Weight loss | 23 | 3.1% |
| Cough for more than two weeks | 23 | 3.1% |
| Diabetic | 43 | 5.9% |
| Chronic debilitating disease | 17 | 2.3% |
| Recent steroid or immunosuppressive treatment | 6 | 0.8% |
| Positive TST | 175 | 23.9% |
| CXR suggestive of TB | 7 | 1.0% |
| DSM | 5 | 0.7% |
| Final Decision | | |
| • Likely Free of TB & LTI | 557 | 76.1% |
| • LTI | 173 | 32.6% |
| • TB | 2 | 0.3% |
| Prescription of anti-TB | | |
| • Not prescribed | 386 | 52.7% |
| • IPT | 344 | 47.0% |
| • Treatment for TB disease | 2 | 0.3% |

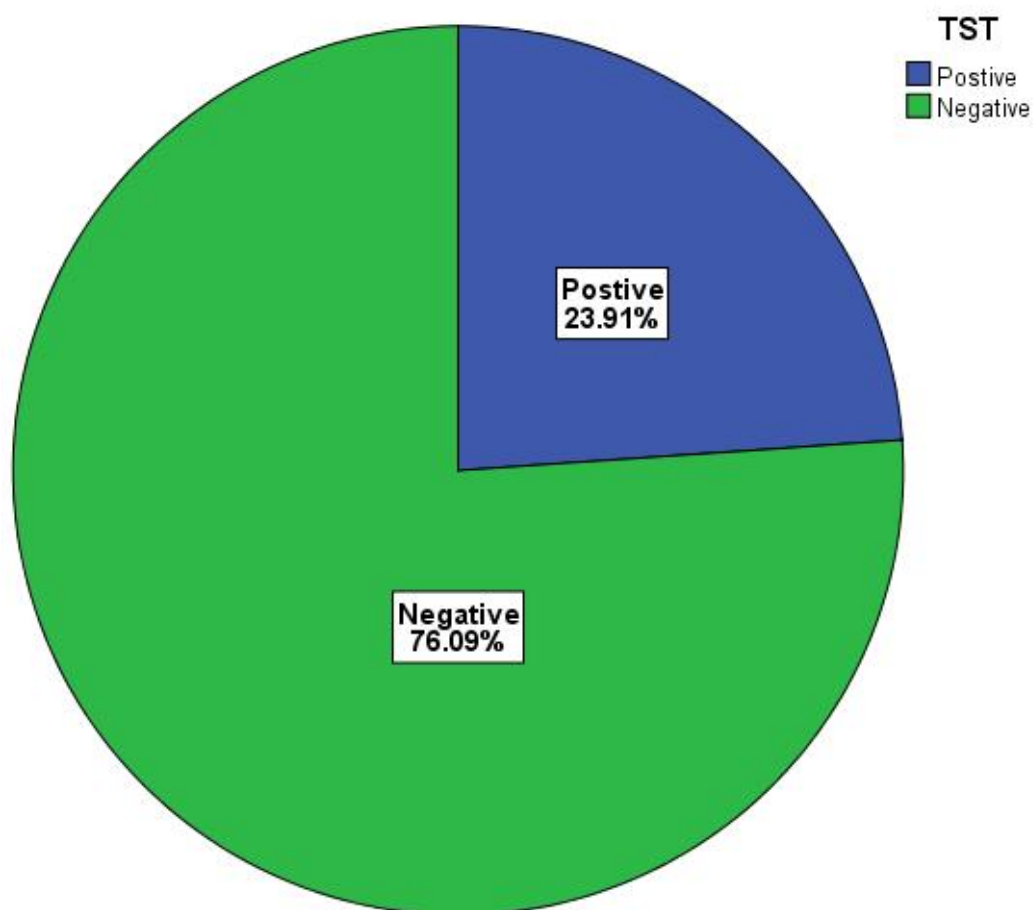


Figure 2: Prevalence of tuberculin skin test positive among household contacts.

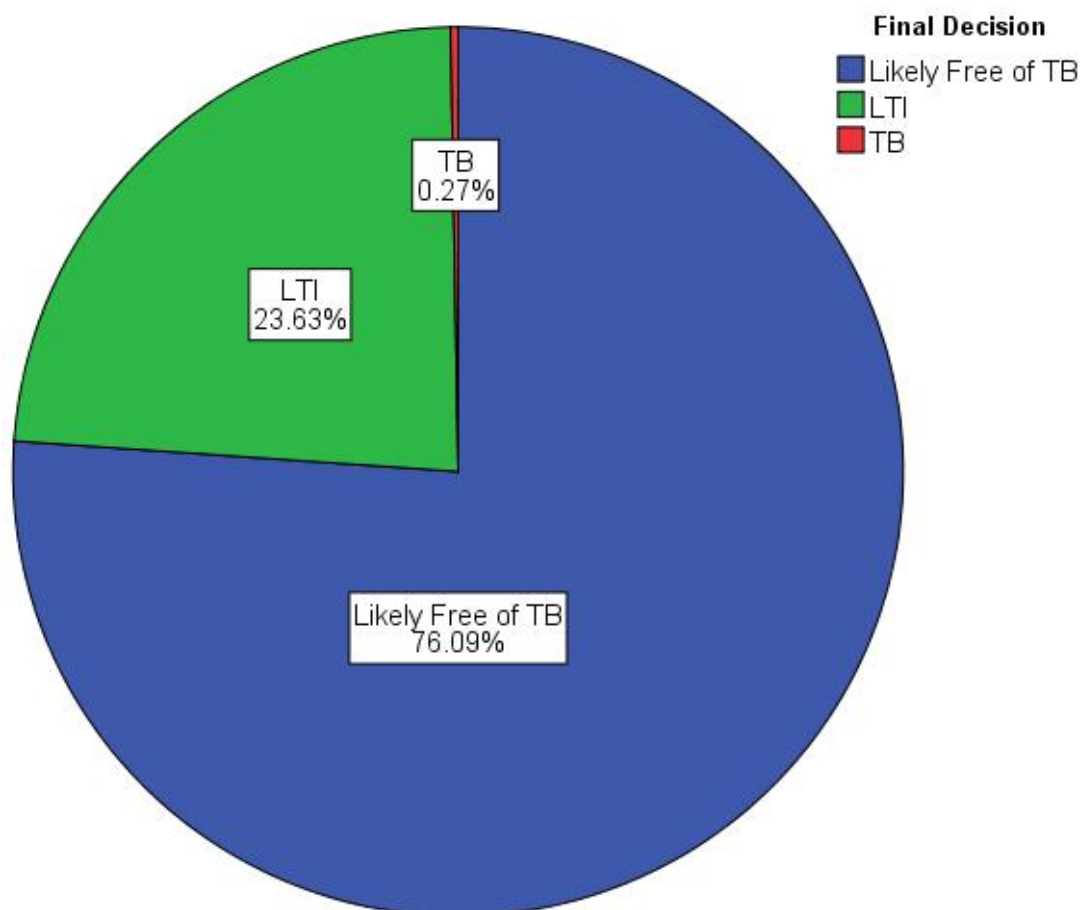


Figure 3: Classification of visited contacts according to status of tuberculosis.

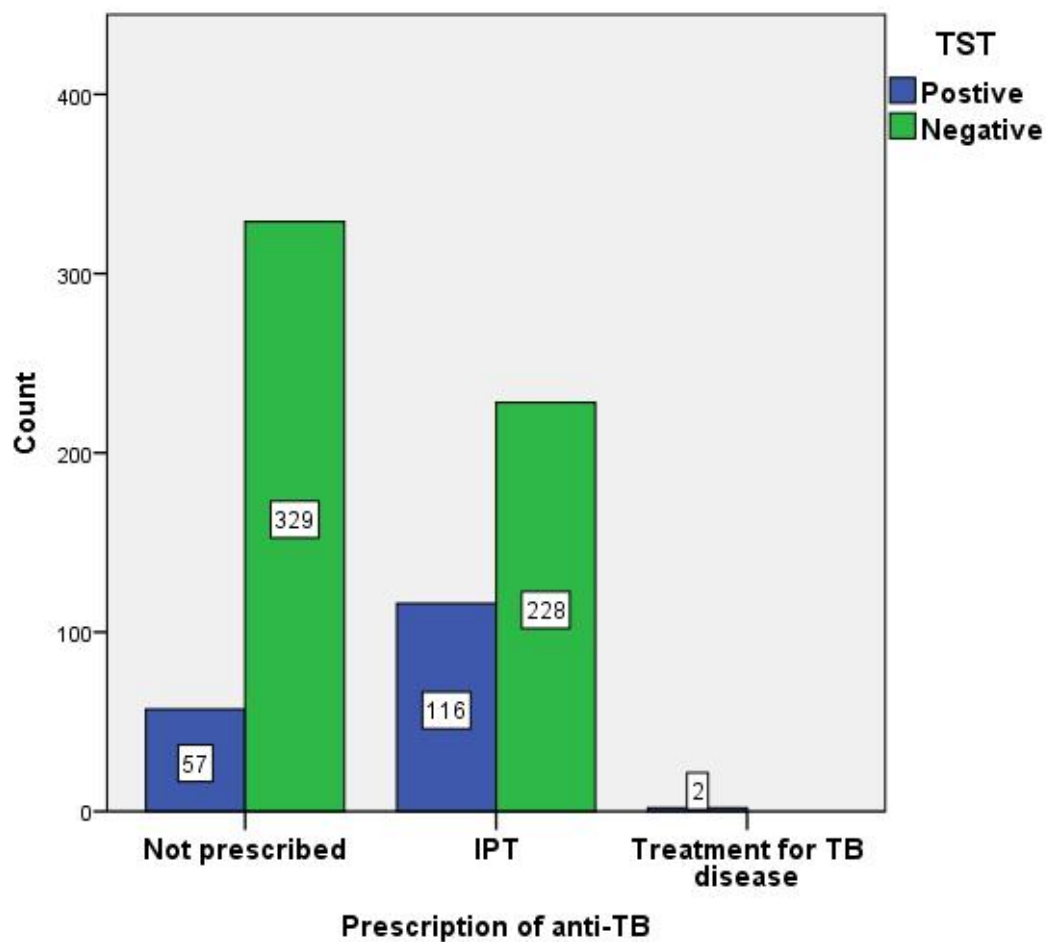


Figure 4: Distribution of contacts regarding further medical management with anti-TB.

Those who were likely to have LTI have the following characteristics:

- Majority (73%) belong to index cases age 15-54 year, mostly (93%) are contacts of relapsed smear positive pulmonary TB patients, 72% aged 15-54 year, 46% male, more to be an offspring (38%) or resident with the family (32%) (table 5).
- Majority (94%) has poor education, regarding job of contacts students (29%) and housewives (32%) are the dominant, 25.5% are smokers, mostly (46%) belong to families larger than five persons, and their monthly income is less than ID 500,000 -(US\$ 416) in 42% and between ID 500,000-1,000,000 (US\$416-832) in 56% (table 6).
- Regarding medical history; small proportions have previous family history of TB prior to recent index case (19%), previous history of TB (5%), diabetes mellitus (19%), chronic debilitating disease (7.5%), recent steroid or immunosuppressive therapy (3.5%) and around 67% are immunized with BCG (table 7).

Associations with the status of positive tuberculin skin test were examined with multivariate logistic regression and yielded the following significant associations:

- Age of index case 15-54 year, age of contact and being offspring to the index case (table 8).
- Illiterate, student, housewife, cigarette smoker, family size larger than 5, monthly income between ID 250,000-500,000 (US\$ 208-416) (table 9).
- Positive history for family history of TB prior to recent index case, positive history of TB, BCG, diabetes, and presence of a chronic debilitating disease (table 10).

Table 5: Distribution of household contact according to TB situation and to personal factors:

| Characteristic | Final Decision about status of household contact | | | | | |
|--|--|-------|---------------|-------|-----|--------|
| | Likely Free of TB | | LTI is likely | | TB | |
| | N=557 | % | N=173 | % | N=2 | % |
| Age Category of Index Cases (y) | | | | | | |
| • 15-54 | 311 | 80.4% | 230 | 73.0% | 2 | 100.0% |
| • > 55 | 76 | 19.6% | 85 | 27.0% | 0 | 0.0% |
| Type of patient | | | | | | |
| • New PTB | 360 | 90.2% | 310 | 93.1% | 2 | 100.0% |
| • Relapsed PTB | 39 | 9.8% | 23 | 6.9% | 0 | 0.0% |
| Age Category of Contact (y) | | | | | | |
| • < 5 | 106 | 27.0% | 4 | 1.2% | 0 | 0.0% |
| • 5-14 | 149 | 37.9% | 53 | 16.5% | 0 | 0.0% |
| • 15-54 | 119 | 30.3% | 231 | 71.7% | 1 | 50.0% |
| • > 55 | 19 | 4.8% | 34 | 10.6% | 1 | 50.0% |
| Sex of Contact | | | | | | |
| • Male | 197 | 49.4% | 152 | 45.6% | 1 | 50.0% |
| • Female | 202 | 50.6% | 181 | 54.4% | 1 | 50.0% |
| Degree of consanguinity | | | | | | |
| • Spouse | 51 | 12.8% | 39 | 11.7% | 0 | 0.0% |
| • Offspring | 225 | 56.4% | 125 | 37.5% | 0 | 0.0% |
| • Father/mother | 72 | 18.0% | 61 | 18.3% | 2 | 100.0% |
| • Resident at home | 51 | 12.8% | 108 | 32.4% | 0 | 0.0% |

Table 6: Distribution of household contact according to TB situation and to socioeconomic factors:

| Characteristic | Final Decision about status of household contact | | | | | |
|--------------------------------|--|--------|---------------|--------|----|--------|
| | Likely Free of TB | | LTI is Likely | | TB | |
| | N | % | N | % | N | % |
| Education | | | | | | |
| • Illiterate | 155 | 38.8% | 60 | 18.0% | 1 | 50.0% |
| • Read & write | 129 | 32.3% | 138 | 41.4% | 1 | 50.0% |
| • Secondary | 103 | 25.8% | 116 | 34.8% | 0 | 0.0% |
| • Higher than secondary | 12 | 3.0% | 19 | 5.7% | 0 | 0.0% |
| Occupation | | | | | | |
| • Employee | 25 | 6.3% | 13 | 3.9% | 0 | 0.0% |
| • Skilled worker | 17 | 4.3% | 19 | 5.7% | 0 | 0.0% |
| • Unskilled worker | 14 | 3.5% | 22 | 6.6% | 0 | 0.0% |
| • Farmer | 0 | 0.0% | 2 | 0.6% | 0 | 0.0% |
| • Retired | 6 | 1.5% | 3 | 0.9% | 0 | 0.0% |
| • Free work | 0 | 0.0% | 2 | 0.6% | 0 | 0.0% |
| • Student | 119 | 29.8% | 96 | 28.8% | 0 | 0.0% |
| • Housewife | 60 | 15.0% | 108 | 32.4% | 1 | 50.0% |
| • Unemployed | 14 | 3.5% | 14 | 4.2% | 1 | 50.0% |
| • Others | 144 | 36.1% | 54 | 16.2% | 0 | 0.0% |
| Smoker | | | | | | |
| • Non-smoker | 284 | 71.2% | 248 | 74.5% | 1 | 50.0% |
| • Cigarette | 106 | 26.6% | 81 | 24.3% | 1 | 50.0% |
| • Argela | 0 | 0.0% | 0 | 0.0% | 0 | 0.0% |
| • Both | 9 | 2.3% | 4 | 1.2% | 0 | 0.0% |
| Category of Family Size | | | | | | |
| • Up to 5 | 130 | 32.6% | 59 | 17.7% | 1 | 50.0% |
| • 6-10 | 138 | 34.6% | 154 | 46.2% | 0 | 0.0% |
| • > 10 | 131 | 32.8% | 120 | 36.0% | 1 | 50.0% |
| Crowding Index | | | | | | |
| • Up to 3 | 252 | 100.0% | 227 | 100.0% | 1 | 100.0% |
| • > 3 | 0 | 0.0% | 0 | 0.0% | 0 | 0.0% |
| Monthly Income (ID) | | | | | | |
| • < 250,000 | 58 | 14.7% | 60 | 18.0% | 2 | 100.0% |
| • 250,000-500,000 | 172 | 43.7% | 79 | 23.7% | 0 | 0.0% |
| • 501,000-1 Million | 134 | 34.0% | 152 | 45.6% | 0 | 0.0% |
| • > 1 Million | 30 | 7.6% | 42 | 12.6% | 0 | 0.0% |

Table 7: Distribution of household contact according to TB situation and to positive medical history:

| Characteristic | Final Decision about status of household contact | | | | | |
|---|--|-------|---------------|-------|----|--------|
| | Free of TB is Likely | | LTI is Likely | | TB | |
| | N | % | N | % | N | % |
| Previous family history of TB | 53 | 9.5% | 33 | 19.1% | 2 | 100.0% |
| Previous history of TB | 5 | 0.9% | 8 | 4.6% | 1 | 50.0% |
| BCG Immunization | 472 | 84.7% | 115 | 66.5% | 1 | 50.0% |
| Diabetic | 10 | 1.8% | 33 | 19.1% | 0 | 0.0% |
| Chronic debilitating disease | 3 | 0.5% | 13 | 7.5% | 1 | 50.0% |
| Recent steroid or immunosuppressive treatment | 0 | 0.0% | 6 | 3.5% | 0 | 0.0% |

Table 8: Results of multivariate logistic regression (outcome is LTI); personal characteristics:

| Variables | Wald Statistic | P value |
|--|-----------------------|----------------|
| Age Category of Index Cases (y) | | |
| • 15-54 | 13.658 | 0.000 |
| • > 55* | | |
| Type of patient | | |
| • New PTB | 1.467 | 0.226 |
| • Relapsed PTB* | | |
| Age Category of Contact (y) | 96.024 | 0.000 |
| • < 5 | 45.912 | 0.000 |
| • 5-14 | 37.062 | 0.000 |
| • 15-54 | 43.137 | 0.000 |
| • > 55* | | |
| Sex of Contact | | |
| • Male | 0.006 | 0.921 |
| • Female* | | |
| Degree of consanguinity | 8.822 | 0.032 |
| • Spouse | 2.272 | 0.132 |
| • Offspring | 6.396 | 0.011 |
| • Father/mother | 0.091 | 0.763 |
| • Resident at home* | | |

Table 9: Results of multivariate logistic regression (outcome is LTI); sociodemographic characteristics:

| Variables | Wald Statistic | P value |
|--------------------------------|-----------------------|----------------|
| Education | 17.552 | 0.001 |
| • Illiterate | 5.260 | 0.022 |
| • Read & write | 0.800 | 0.371 |
| • Secondary | 1.494 | 0.222 |
| • Higher than secondary* | | |
| Occupation | 59.737 | 0.000 |
| • Employee* | | |
| • Skilled worker | 0.004 | 0.953 |
| • Unskilled worker | 2.072 | 0.150 |
| • Farmer | 0.000 | 0.999 |
| • Retired | 0.328 | 0.567 |
| • Free work | 0.066 | 0.798 |
| • Student | 13.488 | 0.000 |
| • Housewife | 10.067 | 0.002 |
| • Unemployed | 2.350 | 0.125 |
| Smoker | 7.329 | 0.026 |
| • Non-smoker* | | |
| • Cigarette | 7.329 | 0.007 |
| • Argela | . | . |
| • Both | 0.000 | 0.999 |
| Category of Family Size | 28.104 | 0.000 |
| • Up to 5* | | |
| • 6-10 | 19.167 | 0.000 |
| • > 10 | 20.223 | 0.000 |
| Crowding Index | | |
| • Up to 3* | | |
| • > 3 | 0.006 | 0.941 |
| Monthly Income (ID) | 38.620 | 0.000 |
| • < 250,000 | 0.076 | 0.796 |
| • 250,000-500,000 | 12.846 | 0.000 |
| • 501,000-1 Million | 1.255 | 0.263 |
| • > 1 Million* | | |

Table 10: Results of multivariate logistic regression (outcome is LTI); medical history:

| Characteristic | Wald Statistic | P value |
|---|-----------------------|----------------|
| Previous family history of TB | 10.569 | 0.001 |
| Previous history of TB | 9.210 | 0.002 |
| BCG Immunization | 27.135 | 0.000 |
| Diabetic | 38.079 | 0.000 |
| Chronic debilitating disease | 16.028 | 0.000 |
| Recent steroid or immunosuppressive treatment | 0.000 | 0.999 |

Actively detected TB patients were two:

- Both patients were from Abo-Graib districts.
- The first patient is a male aged 33 years who is a brother of 44 year-old new PTB index case, has no education (only reads and write), not employed, family size was larger than 5, family monthly income is less than ID 250,000 (US\$ 416) and smoke cigarettes. TST was positive, CXR was suggestive of TB, diagnosis confirmed with DSM and given a treatment for TB. Registers indicated he is a default from a retreatment regimen.
- The second patient is a 62 year old female who is a mother of a 18 year-old new PTB patient, she is illiterate, housewife, non-smoker, family size is larger than 10, family monthly income is less than ID 250,000 (US\$ 416). TST was positive, CXR was suggestive of TB, DSM was positive and treatment was prescribed for this patient.

Regarding Chemoprophylaxis coverage for under five children:

Out of 110 under five children who were visited at their home by investigators, 106 children (96.4%) were covered with IPT (i.e. 3.6% were not given IPT). None of those 106 children was discontinuing IPT therapy during time of investigator visit.

4. References

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Annex (1)

Table: Sampling Frame and selected catchment areas:

| Random | Name of District | Name of PHCC | Selected Catchment Area |
|----------|------------------|----------------------------|-------------------------|
| 0.460506 | الاعظمية | الاول في الاعظمية | |
| 0.041555 | الاعظمية | الثالث في الاعظمية | Yes |
| 0.992807 | الاعظمية | الثاني في الاعظمية | |
| 0.344855 | الاعظمية | الجامعة الاسلامية | |
| 0.666852 | الاعظمية | الجامعة المستنصرية | |
| 0.489846 | الاعظمية | الدهاليك | |
| 0.603257 | الاعظمية | الراشدية | |
| 0.9553 | الاعظمية | الصليخ الجديد | |
| 0.106585 | الاعظمية | الفحامة | |
| 0.762966 | الاعظمية | الكريعات | |
| 0.665971 | الاعظمية | حي القاهرة | |
| 0.22415 | الاعظمية | حي تونس | |
| 0.879484 | الاعظمية | عبدالله الفياض | |
| 0.542331 | الاعظمية | كلية ابن الهيثم | |
| 0.876547 | الاعظمية | كلية الاداب | |
| 0.398007 | الاعظمية | كلية القانون | |
| 0.944842 | البلديات | الامين | |
| 0.048113 | البلديات | البلديات | Yes |
| 0.956675 | البلديات | الحبيبية | |
| 0.797675 | البلديات | الحسينية /حي المعامل (فدك) | |
| 0.612073 | البلديات | الرابع | |
| 0.991132 | البلديات | الرشاد | |
| 0.384797 | البلديات | الرئاسة | |
| 0.734813 | البلديات | الزهراء | |
| 0.769621 | البلديات | الشهيد سلام البهادلي | |
| 0.418716 | البلديات | الصدر الثالث (الفضيلية) | |
| 0.798074 | البلديات | الكمالية | |
| 0.41408 | البلديات | المدينة العمالية | |
| 0.302636 | البلديات | المعلمين | |
| 0.508394 | البلديات | حي النصر | |
| 0.407242 | البلديات | حي النفط | |
| 0.515896 | البلديات | سليمان الفيضي/حي اكد | |
| 0.240224 | البلديات | واقعة الطف | |
| 0.265816 | البلديات | اكد | |
| 0.603318 | البلديات | العبيدي | |
| 0.537229 | البلديات | سلام البهادلي | |
| 0.59169 | البلديات | فدك | |
| 0.684792 | الرصافة | الاول في الكرادة | |
| 0.990519 | الرصافة | الزوية | |
| 0.385052 | الرصافة | الشيخ عمر | |
| 0.403329 | الرصافة | القناة | |
| 0.353681 | الرصافة | الكيلاني | |
| 0.671229 | الرصافة | المستنصرية | |

Annex (1)

| | | | |
|----------|---------------|---------------------------|-----|
| 0.37834 | الرصافة | الادريسي | |
| 0.081432 | الرصافة | باب المعظم النموذجي | |
| 0.836883 | الرصافة | جامعة بغداد | |
| 0.9904 | الرصافة | حي بابل | |
| 0.174423 | الرصافة | فخر الدين ال جميل | Yes |
| 0.720348 | الرصافة | كلية التربية الرياضية | |
| 0.2653 | الرصافة | معهد التكنولوجيا | |
| 0.420365 | الرصافة | الثالث في الكرادة | |
| 0.400086 | الرصافة | تدرس | |
| 0.341173 | الشعب | ابن البلدي | |
| 0.213033 | الشعب | الامام الرضا(ع) سبع قصور | |
| 0.461108 | الشعب | الجمعيات | |
| 0.135779 | الشعب | الحسينية | Yes |
| 0.166922 | الشعب | الحسينية / الزهور | |
| 0.329094 | الشعب | الشعب الاول | |
| 0.165855 | الشعب | الشعب الثاني | |
| 0.218164 | الشعب | بوب الشام | Yes |
| 0.143612 | الشعب | حي البساتين | |
| 0.816266 | الشعب | حي الجزائر | |
| 0.685322 | الشعب | حي اور النموذجي | Yes |
| 0.592364 | الشعب | حي سومر | |
| 0.377697 | الشعب | سليمان الفيضي حي اور | |
| 0.634468 | الشعب | الراشدية | |
| 0.174816 | الشعب | قطر العربية | |
| 0.112572 | المدائن | النهر وان الجديد | |
| 0.609982 | المدائن | الثاني في المدائن | |
| 0.11617 | المدائن | التاميم | |
| 0.042887 | المدائن | الثالث في المدائن | |
| 0.025649 | المدائن | الاول في المدائن | Yes |
| 0.091199 | المدائن | الجسر | |
| 0.19977 | المدائن | الرياض | |
| 0.920186 | المدائن | المجمع النفطي | |
| 0.320499 | المدائن | القرية النفطية | |
| 0.175654 | المدائن | النهر وان الثاني | |
| 0.584151 | المدائن | النهر وان الاول | |
| 0.958578 | المدائن | حي المنتظر | |
| 0.766225 | المدائن | الخالصة | |
| 0.023533 | بغداد الجديدة | الاول بغداد الجديدة | Yes |
| 0.486654 | بغداد الجديدة | الثاني في بغداد الجديدة | |
| 0.260048 | بغداد الجديدة | الحاج داود الجنابي | |
| 0.345797 | بغداد الجديدة | الرشيد في الزعفرانية | |
| 0.605525 | بغداد الجديدة | السندباد | |
| 0.773779 | بغداد الجديدة | زيونة | |
| 0.649079 | بغداد الجديدة | الضباط | |
| 0.937926 | بغداد الجديدة | سعيدة | |
| 0.44429 | بغداد الجديدة | شقق زيونة | |
| 0.559908 | بغداد الجديدة | مجمع التسفيرات في الرصافة | |

Annex (1)

| | | | |
|----------|---------------|---------------------------|-----|
| 0.686408 | بغداد الجديدة | القناة | |
| 0.769662 | مدينة الصدر | (١٤) تموز | |
| 0.02158 | مدينة الصدر | الاول | Yes |
| 0.360411 | مدينة الصدر | الثالث | |
| 0.624825 | مدينة الصدر | الثامن | |
| 0.89757 | مدينة الصدر | الثاني | |
| 0.935153 | مدينة الصدر | الخامس | |
| 0.276517 | مدينة الصدر | السابع | |
| 0.885434 | مدينة الصدر | السادس | |
| 0.019244 | مدينة الصدر | الشهيد احمد المالكي | Yes |
| 0.233182 | مدينة الصدر | الشهيد الشيخ حسين المالكي | |
| 0.105785 | مدينة الصدر | الشهيد جمال الموسوي | Yes |
| 0.519037 | مدينة الصدر | الشهيد حسين السوبعدي | |
| 0.313749 | مدينة الصدر | الشهيد حسين علاء الموسوي | |
| 0.309797 | مدينة الصدر | الشهيد حيدر يسر | |
| 0.985169 | مدينة الصدر | الشهيد علاء الشويلي | |
| 0.256183 | مدينة الصدر | الشهيد علي الكعبي | Yes |
| 0.604546 | مدينة الصدر | الشهيد كاظم عبد النبي | |
| 0.429844 | مدينة الصدر | حي المهدي (حي طارق) | |
| 0.310928 | مدينة الصدر | الشهيد حسين جمال الموسوي | |
| 0.284376 | مدينة الصدر | الشهيد حيدر موسى | |
| 0.452507 | مدينة الصدر | حي جميلة | |
| 0.707684 | مدينة الصدر | حي جميلة الثانية | |
| 0.766183 | ابى غريب | الزراعة | |
| 0.574081 | ابى غريب | الزيدان | |
| 0.573943 | ابى غريب | النصر والسلام | |
| 0.03888 | ابى غريب | أبي غريب | Yes |
| 0.516821 | ابى غريب | عبد العزيز البديري | |
| 0.835271 | ابى غريب | عثمان بن عفان | |
| 0.641733 | ابى غريب | عكر كوف | |
| 0.628748 | ابى غريب | كلية الزراعة | |
| 0.147646 | ابى غريب | خان ضاري | |
| 0.908245 | ابى غريب | شهداء الداخلية | |
| 0.326529 | الاعلام | الاعلام | |
| 0.178533 | الاعلام | اجنادين | Yes |
| 0.343391 | الاعلام | البياع | |
| 0.355692 | الاعلام | الرسالة | |
| 0.790088 | الاعلام | السويب | |
| 0.28911 | الاعلام | السيدية | |
| 0.634096 | الاعلام | الشباب | |
| 0.534459 | الاعلام | الرضوانية | |
| 0.985806 | الدورة | التحدي النموذجي | |
| 0.832737 | الدورة | الحضر النموذجي | |
| 0.50636 | الدورة | الحضر | |
| 0.119186 | الدورة | التحدي | Yes |
| 0.270167 | الدورة | الدورة الجديد | |
| 0.399423 | الدورة | الدورة لطب الاسرة | |

Annex (1)

| | | | |
|----------|----------|-----------------------------------|-----|
| 0.302223 | الدورة | بلاط الشهداء | |
| 0.654985 | الدورة | حبيبة جي | |
| 0.308974 | الدورة | حي الصحة | |
| 0.576225 | الدورة | عمال المصفي | |
| 0.948983 | الدورة | عوائل المصفي | |
| 0.170993 | الدورة | هور رجب | |
| 0.310274 | الطارمية | التاجي الثاني | |
| 0.738047 | الطارمية | الشيخ حمد | |
| 0.754223 | الطارمية | الطابي | |
| 0.12399 | الطارمية | الطارمية | |
| 0.494303 | الطارمية | العبايجي | |
| 0.06238 | الطارمية | المشاهدة | Yes |
| 0.755565 | الطارمية | المصلحية | |
| 0.403766 | الطارمية | المعلمين | |
| 0.754833 | الطارمية | حمدي الباجعةجي | |
| 0.705311 | الطارمية | سجن كروبر | |
| 0.516052 | العامل | الجمعيات | |
| 0.199663 | العامل | الجهاد | |
| 0.215687 | العامل | السلام السكني التدريبي لطب الاسرة | |
| 0.948988 | العامل | الشهداء | |
| 0.412175 | العامل | الفرات | |
| 0.733095 | العامل | المكاسب | |
| 0.064168 | العامل | حي العامل | Yes |
| 0.218002 | العامل | قرية السلام | |
| 0.623791 | العامل | قرية المطار | |
| 0.700368 | العدل | البكرية | |
| 0.93626 | العدل | الخضراء | |
| 0.333089 | العدل | العامة | |
| 0.679914 | العدل | العدل | |
| 0.475452 | العدل | الغزالية | |
| 0.579503 | العدل | كلية الطب البيطري | |
| 0.058775 | العدل | الجامعة | |
| 0.005712 | العدل | الغزالية الاول | Yes |
| 0.42315 | العدل | الغزالية الثاني | |
| 0.019894 | العدل | الشهيد سيف زكي السعد | |
| 0.86698 | الكاظمية | الجوادين النموذجي | |
| 0.228316 | الكاظمية | الحرية | |
| 0.261435 | الكاظمية | الحرية الاول | |
| 0.447153 | الكاظمية | الدولي | |
| 0.811721 | الكاظمية | الزهراء | |
| 0.727414 | الكاظمية | السلام | |
| 0.054046 | الكاظمية | الشهيد بشير الجزائري | Yes |
| 0.934189 | الكاظمية | الشهيد عبد الصاحب دجيل | |
| 0.040475 | الكاظمية | الصابيات | |
| 0.619609 | الكاظمية | العراق الجديد | |
| 0.819014 | الكاظمية | الكاظمية الأول | |
| 0.209627 | الكاظمية | النور | |

Annex (1)

| | | | |
|----------|-----------|---------------------|-----|
| 0.223993 | الكاظمية | النور التدريبي | |
| 0.274582 | الكرخ | الإسكان | |
| 0.248149 | الكرخ | الجمعيات | |
| 0.569235 | الكرخ | الجهاد | |
| 0.901569 | الكرخ | الداخلية | |
| 0.475343 | الكرخ | الرحمانية | |
| 0.7731 | الكرخ | السلام | |
| 0.276924 | الكرخ | الشالجية | |
| 0.206717 | الكرخ | الشهيد طه عبد الرضا | |
| 0.841904 | الكرخ | الصالحية | |
| 0.394011 | الكرخ | الفرات | |
| 0.561103 | الكرخ | الكرخ | |
| 0.965611 | الكرخ | المنصور | |
| 0.060448 | الكرخ | الوشاش | Yes |
| 0.622829 | الكرخ | حي العامل | |
| 0.48747 | المحمودية | التحرير | |
| 0.301408 | المحمودية | الجبسية | |
| 0.119796 | المحمودية | الرشيد | |
| 0.201877 | المحمودية | الرشيد النموذجي | |
| 0.886775 | المحمودية | الرضوانية | |
| 0.367264 | المحمودية | السياقية | |
| 0.90354 | المحمودية | العدوانية | |
| 0.35273 | المحمودية | العطاء | |
| 0.253586 | المحمودية | اللطيفية | |
| 0.39878 | المحمودية | المحمودية | |
| 0.037108 | المحمودية | المحمودية النموذجي | Yes |
| 0.353004 | المحمودية | المظهرية | |
| 0.457673 | المحمودية | المكيظيمة | |
| 0.902741 | المحمودية | اليوسفية | |
| 0.386119 | المحمودية | تل اسمر | |
| 0.418328 | المحمودية | حي الزهور | |
| 0.085528 | المحمودية | صدر اليوسفية | |
| 0.204091 | المحمودية | مشروع اللطيفية | |

Annex (2)

الموافقة المستنيرة للمشاركين في الدراسة

عنوان الدراسة: التقصي الفعال بين للملامسين البيئيين لمرضى التدرن في بغداد، ٢٠١٣

الغرض من الدراسة: معرفة أثر تقصي الملامسين على نسبة كشف مرضى التدرن

الإجراءات: اجراء فحوصات التيوبركلين، أشعة الصدر السينية و فحص القشع و حسب الحالة.

المخاطر/المتاعب : لا توجد مخاطر ناتجة عن مشاركتك في هذه الدراسة حتى وإن قررت عدم الإجابة عن أي سؤال أو قررت إيقاف المقابلة في أي وقت.

الفوائد: لا توجد فوائد شخصية لك من المشاركة في الدراسة. ومن المتوقع وجود منافع مجتمعية عن الدراسة حيث ستعمل السلطات الصحية على الاستفادة من معلومات الدارسة لتحسين الخدمات الصحية المقدمة لمرضى السل والمجتمع.

حقوق المشاركين: تعد مشاركتك طوعية وقد تختار إيقاف المقابلة في أي وقت ودون شروط. ومن حقك الاستفسار عن اية نقاط غير مفهومة

السرية : لن يتم التصريح عن إجاباتك لأي شخص وستبقى مجهولة الهوية. ولن تتم كتابة اسمك على الاستبيان أو الاحتفاظ بها في أي سجلات أخرى. وسيتم إتلاف البيانات في حال الانسحاب من المقابلة. ويمكن الوصول إلى المعلومات فقط من قبل أعضاء فريق البحث ولأغراض البحث فقط.

موافقة المشارك:

أعلن أنه قد تم تزويدي بالمعلومات أعلاه وتم شرحها لي وكان لدي كامل الفرصة في طرح الأسئلة وحصلت على إجابات كافية حول كافة الأسئلة التي طرحتها. وأعلن عن مشاركتي الطوعية في هذه الدراسة وأنا على معرفة بحقي الكامل في الانسحاب من الدراسة دون أي شروط.

اسم المشارك:-----توقيع المشارك:-----

في حال عدم قدرة المشارك على قراءة النموذج وحاجته لشخص لشرح/ترجمة النموذج.

اسم الشخص الذي قام بشرح/ترجمة النموذج:-----

عنوان الشخص الذي قام بشرح/ترجمة النموذج:-----

توقيع الشخص الذي قام بشرح/ترجمة النموذج:-----

توقيع القائم بالمقابلة مع التاريخ:-----

Annex (2)

Annex (3)

Informed consent form

Study Title: **Active Case finding for household contacts of pulmonary TB patients in Baghdad, 2013.**

Date of Interview: SN:

District:

Address of respondent:

Interviewer information:

Name:

Signaturer:

Place of work:

Mobile:

Informed consent form for TB patients:

Study title: Active Case finding for household contacts of TB patients in Baghdad, 2013.

Purpose of the study: study factors associated with TB and latent TB infection among household contacts of smear positive pulmonary TB patients.

Methods: Interviews of TB patients.

Risks/hazards: No risk or hazards will result due to participation in this study and you can stop the interview in any time.

Benefits: no personal benefits yeild from this participation but public health benefits to TB patients and the community are expected after health authorities utilize results of this study.

Praticipants rights: this participation is voluntary and you may stop this interview in any time and you have the right to request the interviewer to explain to you any unclear point or question.

Confidentiality: Your responses will be kept confidential and anonymous and accessed only by study team for research purposes.

Participants' Consent: I declare that I am well informed about above information and well explained for me and had the chance to ask questions and get sufficient answers, and my participation in this study is voluntary and I am fully knowlegeale of my right to unconditioned discontinue of the interview or withdrawal from this study

Name of the participant:

Signature:

In case of the participant's inability to read the form and needed for someone to read and interpret the informed consent form; the fields below are filled by the person who read the consent form for the participant:

Name:

Signature:

Adress:

Annex (4)

استبانة المسح:التقصي الفعال للملّاسين البيّتين لمرضى التدنر في بغداد، ٢٠١٣.

| اسم القطاع الصحي | تسلسل الاستمارة | رقم المريض حسب سجل المريض في القطاع | اسم مريض التدنر الثلاثي و رقم الموبايل | اسم الملامس الثلاثي |
|------------------|-----------------|---|--|---------------------|
| س | رمز الاجابة | الاسئلة | عمر المريض: | عمر الملامس: |
| ١ | | نوع مريض التدنر : ١- جديد ٢- ناكس | | |
| ٢ | | جنس الملامس: ١- ذكر ٢- أنثى | | |
| ٣ | | هل من أصابة سابقة بالتدنر في العائلة: ١- نعم ٢- لا | | |
| ٤ | | هل الملامس مصاب سابقا بمرض التدنر: ١- نعم ٢- لا | | |
| ٥ | | درجة قرابة الملامس من المريض: ١- الزوج أو الزوجة ٢- من الأبناء ٣- أم/ أب ٣- مقيم مع العائلة ٤- ملامس وقتي /ضيف | | |
| ٦ | | هل الملامس محصن بلقاح السبل (BCG): ١- نعم ٢- لا | | |
| ٧ | | هل راجع الملامس لأي من المراكز التشخيصية للتدنر قبل المقابلة؟ ١- نعم ٢- لا | | |
| ٨ | | هل تم ابلاغ مريض التدنر بارسال ملامسيه للفحص عن التدنر؟ ١- نعم ٢- لا | | |
| ٩ | | هل تم وصف علاج كيميائي وقائي للملامس؟ ١- نعم ٢- لا | | |
| ١٠ | | هل تم اعلام الملامس أو معيله عن الفترة اللازمة لأخذ العلاج الوقائي؟ ١- نعم ٢- لا | | |
| ١١ | | في حال تم قطع العلاج الكيميائي بعد وصفه، ما هي المدة التي استمر فيها بأخذ العلاج الوقائي؟ | | |
| ١٢ | | هل الملامس يعاني من حمى ١- نعم ٢- لا | | |
| ١٣ | | هل الملامس يعاني من تعرق ليلي ١- نعم ٢- لا | | |
| ١٤ | | هل الملامس يعاني من فقدان للشهية ١- نعم ٢- لا | | |
| ١٥ | | التعليم: ١- لا يقرأ و لا يكتب ٢- يقرأ و يكتب/تعليم ابتدائي ٣- تعليم متوسط/اعدادي ٤- دبلوم فما فوق | | |
| ١٦ | | نوع العمل: ١- موظف ٢- عامل ماهر ٣- عامل غير ماهر ٤- فلاح ٥- متقاعد ٦- تاجر ٧- طالب ٨- ربة بيت ٩- عاطل عن العمل ١٠- أخرى | | |
| ١٧ | | هل الملامس يعاني من فقدان للوزن ١- نعم ٢- لا | | |
| ١٨ | | هل الملامس يعاني من سعال لأكثر من أسبوعين ١- نعم ٢- لا | | |
| ١٩ | | مصاب بمرض السكري؟ ١- نعم ٢- لا | | |
| ٢٠ | | هل المريض مدخن؟ ١- غير مدخن ٢- مدخن سكانر ٣- أركيلة ٤- سكانر و أركيلة | | |
| ٢١ | | عدد الغرف التي تستخدم للنوم | | |
| ٢٢ | | عدد أفراد الأسرة | | |
| ٢٣ | | الدخل الشهري للعائلة: ١- أقل من ٢٥٠.٠٠٠ ٢- ٢٥٠.٠٠٠ الى ٥٠٠.٠٠٠ ٣- ٥٠٠.٠٠٠ الى مليون ٤- أكثر من مليون | | |
| ٢٤ | | أمراض مزمنة أخرى مستنفذة للصحة (مثل عجز أي من القلب او الكلى أو الكبد)؟ ١- نعم ٢- لا | | |
| ٢٥ | | كان الجواب نعم فحدد نوع المرض رجاء؟ | | |
| ٢٦ | | هل استخدم الملامس مؤخرا علاج مثبط للمناعة أو أدوية الستيرودية؟ ١- نعم ٢- لا | | |
| ٢٧ | | نتيجة فحص التيوبركلين ايجابية؟ ١- نعم ٢- لا | | |
| ٢٨ | | نتيجة فحص أشعة الصدر السينية: ١- مشاهدات ترجح الاصابة بمرض التدنر ٢- سلبية ٣- لم يتم الفحص | | |
| ٢٩ | | نتيجة فحص القشع لعصيات التدنر: ١- ايجابي القشع ٢- سلبي القشع | | |
| ٣٠ | | التشخيص النهائي للملامس: ١- سليم ٢- تدنر خامل ٣- تدنر (نوع التدنر هو _____) | | |
| ٣١ | | وصف العلاج الكيميائي: ١- لم يوصف ٢- تم وصف علاج وقائي ٣- تم وصف توليفة علاج مرض التدنر | | |

(Date) التاريخ (signature) التوقيع (Name of Interviewer) اسم منظم الاستمارة

(Date) التاريخ (signature) التوقيع (Name of Supervisor) اسم الطبيب المدقق (منسق التدنر/القطاع)

Annex (5)

Questionnaire – Active Case finding for household contacts of TB patients in Baghdad, 2013

| District | SN | ENRS patient ID | Patient Full Name& Mob. | Contact Full Name |
|----------|-----------------|---|-------------------------|-------------------------|
| | | | | |
| | Response | Questions | Pat. Age (y): | Contact Age (y): |
| 1 | | Type of patient: 1- New 2- Relapsed | | |
| 2 | | Sex of Contact: 1- Male 2-Female | | |
| 3 | | Positive family history of previous TB disease: 1- Yes 2-No | | |
| 4 | | Previous attack of TB disease to contact: 1- Yes 2-No | | |
| 5 | | Degree of consanguinity: 1-Spouce 2-Ofspring 3- Father/mother 4- Resident at home 5-Guest | | |
| 6 | | Immunized with BCG: 1- Yes 2-No | | |
| 7 | | Visited TB health facility for TB screening before this interview: 1- Yes 2-No | | |
| 8 | | TB index patient was informed to send his contacts for TB screening? 1- Yes 2-No | | |
| 9 | | Prescribed chemoprophylaxis against TB for this contact? 1- Yes 2-No | | |
| 10 | | Informed (or his parent) about the duration of chemoprophylaxis? 1-Yes 2-No | | |
| 11 | | If chemoprophylaxis discontinued; duration of treatment is | | |
| 12 | | Contact suffers fever: 1- Yes 2-No | | |
| 13 | | Contact suffers night sweats: 1- Yes 2-No | | |
| 14 | | Contact suffers loss of appetite: 1- Yes 2-No | | |
| 15 | | Education: 1-Illiterate 2-Read&write 3-Secondary 4-Higher than secondary | | |
| 16 | | Occupation: 1-Employee 2-Skilled worker 3-Unskilled worker 4-Farmer 5-Retired 6-Free work 7-Student 8-Housewife 9-Unemployed 10-Others | | |
| 17 | | Complained weight loss: 1- Yes 2-No | | |
| 18 | | Complained cough for more than two weeks: 1- Yes 2-No | | |
| 19 | | Diabetic: 1- Yes 2-No | | |
| 20 | | Smoker: 1- non-smoker 2-Cigarette smoker 3-Argela smoker 4-smokes both | | |
| 21 | | Number of rooms used for sleeping | | |
| 22 | | Family size (number) | | |
| 23 | | Monthly income (ID): 1-< 250,000 2-250,000-500,000 3-501,000-million 4- >million | | |
| 24 | | Chronic debilitating disease: 1- Yes 2-No | | |
| 25 | | Specify this debilitating disease | | |
| 26 | | Recently used steroidal treatment or immunosuppressive therapy: 1- Yes 2-No | | |
| 27 | | Tuberculin skin test Positive: 1- Yes 2-No | | |
| 28 | | CXR result: 1- suggestive of TB 2-Negative 3- Not done | | |
| 29 | | DSM (AFB) result: 1- Positive 2- Negative 3- Not done | | |
| 30 | | Final diagnosis of contact: 1-Free of TB 2- LTI is likely 3- TB (site:) | | |
| 31 | | Chemotherapy: 1- Not prescribed 2- prophylactic 3-Treatment for TB | | |

Name of Interviewer

signature

Date

Name of Supervisor

signature

Date

National Tuberculosis Control Program / IRAQ

WHO 2011 – 2012 Grant for Operational Research

Sub-Activity Technical Report

Study Project Title:-

**Active case finding for household contact of T.B
patient in Baghdad city**

Principal Investigator:- Dr. Layth Ghazi Salihi

Type of sub-activity:- Training Session

Annex (6)

Title: - Training session for Study Data Collectors.

Date: - Jan 9th- 11th 2013

Venue:- Respiratory and Chest Clinic in Baghdad.

Agenda:-

| Day &Time | Agenda | Facilitator |
|----------------------|---|-----------------------------------|
| Day 1 | | |
| 9:30-9:45 | Greeting | Dr Layth |
| 9:45-10:15 | Objectives of the training session | Dr Layth |
| 10:15-10:30 | Coffee break | |
| 10:30-11:30 | Priorities of Operational Research in Tuberculosis | Dr Mohammed Yahya |
| 11:30-12:00 | Discussion | |
| 12:00-1:00 | Risk Factors of TB among Contact | Dr Layth |
| 1:00- 1:30 | Reviewing the Questionnaire form | Dr Layth & Dr Mohammad |
| Day 2 | | |
| 9:00-10:00 | Discussion | Dr Layth & Dr Mohammad |
| 10:00-10:15 | Coffee break | |
| 10:15-1:15 | Work group | Dr Layth & Dr Mohammad |
| 1:15-2:00 | Discussion | Dr Layth & Dr Mohammad |

Aim of this training session:

Prepare study personnel for the study implementation.

Objectives:

- 1- Obtain a panoramic view about the study; its objectives, methodology, tools and implementation.**
- 2- Train and discuss study tool and pretesting for a final version.**

Facilitators:

1-Dr Layth Ghazi Salihi, FIBMS-Community Medicine (NTP-OR focal point)

2-Dr Mohammad Yahya Abdulrazzaq, specialist in respiratory medicine (Deputy Manager of NTP)

Annex (6)

Participants: 14 district TB coordinators from Baghdad; annex -1.

Description of the Session:

The 2 days training course is for training the study staff primarily to become familiar with collection of the data from both cases and controls who subject to eligible people.

The aim of this course is mostly concentrated on reviewing, pretesting and revising the structured questionnaire which was developed for this study.

Day 1

Introduction to the study and its purposes followed by illustration the priorities of the operational research as one component of the stop TB strategies.

Details about operational issues were discussed (sampling technique, sample size, study conduct, data collection team, supervision, budgeting, etc.).

At the end of the first day questionnaire forms are distributed to each participant for reviewing , clarify confusing items , comment on apparent validity of each items.

Day 2

Open discussion was continuous , after that the participants are divided into three groups , interviewing done between participants ,and with the patients attending the TB Clinic ,each interview last approximately 10 minutes and the structured questionnaire has been revised.

Annex (6)

Annex -1-

National Tuberculosis Control Program OR Training Activity

Date: Jan 9-10, 2013

| No. | Name | Job Title | Signature | |
|-----|-----------------------|------------------|---------------------|---------------------|
| | | | 1 st day | 2 nd day |
| 1 | Dr. Ali Abd Mahmood | D.T.C Alkarmel | | |
| 2 | Dr. Nassir Shamsan | D.T.C Al-Balad | | |
| 3 | Dr. Abbas Hameed | D.T.C Al-Amel | | |
| 4 | Dr. Hakeem Saad | D.T.C Al-Amel | | |
| 5 | Dr. Abdul Latef | TBC ALShab | | |
| 6 | Dr. Talib Shammeh | DTC Alkarkh | | |
| 7 | Dr. Abdul Muhaimin | Moham DTC Alndef | | |
| 8 | Dr. Mohammed Mafti | DTC ALApdhamiya | | |
| 9 | Dr. Shamil Galab Abed | DTC Kachumia | | |
| 10 | Dr. Ihab Rakib Akil | DTC abugwaib | | |
| 11 | Dr. Salam Jafar Waji | DTC Alsadr City | | |
| 12 | Dr. Wael Sabih Zamil | DTC Raba | | |
| 13 | Dr. Hassan Ali Karam | DTC Abu Bghat | | |
| 14 | Dr. Saud Abdullah | DTC Mahmediya | | |
| 15 | | | | |
| 1 | Dr. Layth Salih | Facilitator | | |
| 2 | Dr. Mohamed Vahy | Facilitator | | |

Annex (6)

Picture from the training session



Annex (7)

Performing and reading the tuberculin skin test

The recommended tuberculin test is standardized:

- **Purified tuberculin used:**

- IP48 Pasteur is a purified lyophilized tuberculin that is delivered with its solvent and must be reconstituted immediately prior to use. Intradermal injection of 0.1 ml of the reconstituted solution corresponds to 10 units of IP48 tuberculin, equivalent to 2 units of RT23.

- **Required materials:**

- a fine (5/10) short (1 cm) intradermal needle, with a short bevel.
- a syringe graduated in 0.01 ml with an airtight plunger.

- **Injection technique:**

- 0.1 ml of tuberculin solution must be injected intradermally, about a third of the way down on the volar aspect of the forearm, at a distance from any other scarring (such as BCG).
- If the intradermal injection has been performed correctly, the product should be injected with difficulty and a rounded white weal should form around the point of the needle, giving an “orange peel” aspect. If a weal does not appear, this means that the needle is not inside the dermis: the needle should be withdrawn and the injection repeated elsewhere.

- **Test reading:**

- The test is read 48 to 72 hours after the injection; this involves identifying the margins of induration of the skin reaction and measuring its transverse diameter.

On examination the site of injection can have different aspects:

- either the skin is normal,
- or the skin is raised by a weal with a reddish centre. This weal is sometimes surrounded by a large reddish aureole or covered with a number of vesicles.

The test result must be measured with precision: the site is palpated and the transverse margins of the induration (and not the redness) are marked with a pencil. Next the transverse diameter of the induration is measured using a transparent ruler. **The test result is always expressed in mm.**

- **Interpretation of the result**

A tuberculin reaction of ≥ 10 mm is positive, indicating that the individual has most likely been infected. A reaction of < 10 mm is negative, and the individual is likely not to have been infected. In infected subjects, the reaction can nevertheless be negative due to malnutrition, severe disease, a viral infection in HIV positive patients, treatment with corticosteroids or immunosuppressants, advanced age, or if the test was performed during the early stages of infection.

Source:

Khalid N, Enarson D. Tuberculosis A Manual for Medical Students.WHO.2005.P; 10.

Annex (8)

q Direct Smear Microscopy

A smear of a selected part of a submitted specimen is made on a slide, then examined by microscope after staining.

- **Staining method:**

Ziehl-Neelsen staining

The smear is covered with carbol fuchsin, and then heated. The smear is then destained successively using sulfuric acid and alcohol. All of the smears must be almost totally destained, and then restained with methylene blue. The bacilli are stained red by the fuchsin and are resistant to the acid and alcohol, hence the name **acid-fast bacilli** (AFB).

Destaining by the successive application of acid and alcohol can also be done using only 25% sulfuric acid; however, it should be applied several times until the smear is completely destained. This is the method recommended by the IUATLD, as it is less delicate and does not require alcohol (which is not always available in some countries).

On microscopic examination of the stained smear, the tubercle bacilli look like fine, red, slightly curved rods that are more or less granular, isolated, in pairs or in groups, and stand out clearly against the blue background (Appendix 4).

- **Reading by microscopy**

After Ziehl-Neelsen staining

The stained smear is examined using a binocular microscope with an immersion lens (magnification x 100). The number of AFB per 100 fields (about one length and one width of a slide) are counted. This technique is simple, rapid and fairly inexpensive.

- **How to record the results**

After Ziehl-Neelsen staining

The number of bacilli present in a patient's sputum is in direct relation to the degree of infectiousness. For this reason the result must be recorded in a quantitative fashion. The following method proposed by the IUATLD should be used:

Reading method for smears stained by Ziehl-Neelsen (immersion lens x 100)

| Number of AFB | Code |
|------------------------------------|---------------------|
| No AFB per 100 immersion fields | 0 |
| 1–9 AFB per 100 immersion fields | exact number of AFB |
| 10–99 AFB per 100 immersion fields | + |
| 1–10 AFB per field | ++ |
| More than 10 AFB per field | +++ |

Source:

Khalid N, Enarson D. Tuberculosis A Manual for Medical Students.WHO.2005.P; 12-13.

Annex (9)

Preparation of smears and Ziehl-Neelsen staining

- **Labelling the slides**

- Take a new slide; using a diamond-pointed stylus, engrave the identification number of the sputum specimen at the end of each slide, referring to the accompanying list of samples.
- Prepare one slide per sample in this way (do not prepare more than 10–12 sputum samples at a time)

- **Preparation of smears**

- Take each slide by the end where the number is engraved, and place it on the slide-holder with the engraved end towards you
- Take the sputum container that corresponds to the number of the slide, open it and place the container to the right of the slide rack with its lid next to it
- Hold the metal loop over the flame until red-hot and leave it to cool
- Take a small portion of sputum, selecting purulent particles if present
- Spread the smear as thinly as possible (2 cm x 1 cm) on the slide
- Place the slide on the dryer
- Sterilise the metal loop over the flame before taking the next sputum container
- Prepare the other slides in the same way

- **Drying**

- Let the smear dry in the air for at least 15 minutes (15–30 minutes). Do **not** use the burner to dry the smear

- **Fixation**

- Take each slide by the engraved end using forceps, with the smear uppermost
- Pass the slide three times (for 3–5 seconds) through the flame of the Bunsen burner or spirit lamp
- Put the slide back on the clean dryer

- **Staining**

- Place the slides on the slide-rack with the smears uppermost, ensuring that the edges do not touch
- Cover the slides with Ziehl-Neelsen carbol fuchsin. The fuchsin should be filtered directly onto the slides through filter paper placed in a funnel
- With a wad of cotton wool soaked in methylated spirits fixed to the end of a metal rod, heat the slides very gently from underneath until they begin to steam. The stain must never boil or dry on the slide
- Leave the warm stain for 3 minutes
- Repeat the heating of the stain twice

- **Destaining**

- Rinse each slide separately in running tap water until the excess stain is washed away
- Replace all of the slides on the slide-rack and cover each slide with the sulfuric acid
- Leave for 3 minutes
- Rinse in running water
- Cover in 70° alcohol
- Leave for 5 minutes
- Rinse again in running water
- Destain again with the acid until almost all of the stain has disappeared
- Rinse each slide again under running water

- **Counter-staining**

- Replace the destained slides on the slide-rack and recover the smears with 0.3% methylene blue for 1 minute
- Rinse each slide in running water and leave to dry in the open air

Destaining of the smears can also be done using only 25% sulfuric acid several times until the smear is completely destained (IUATLD Tuberculosis Guide)

Source:

Khalid N, Enarson D. Tuberculosis A Manual for Medical Students.WHO.2005.P; 20.