

Research Article

Adherence of national tuberculosis control program (NTP) staff in Baghdad to the international standards for tuberculosis care (ISTC)

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Abstract

Background: Despite the great efforts in the past decade to control TB, the disease remains an enormous global health problem. Important goal of the International Standards for Tuberculosis Care ISTC is to promote unified approaches to the diagnosis and management of TB among all categories of clinicians.

Objective: To assess the adherence of National Tuberculosis Programme NTP to ISTCs for TB care.

Methods: A cross sectional study involved all the 15 District TB Coordinator DTCs in Baghdad from March 1st 2012 to May 30th 2012 through direct interview with their physicians, lab technicians, and treatment providers by a structured questionnaire extracted from the International Standards for Tuberculosis Care ISTC.

Results: Standards for diagnosis were implemented by most DTCs except for sputum culture of smear negative and childhood pulmonary tuberculosis 26%, 6% respectively. Standards for treatment also were implemented by the majority; poor implementation was only in tracing defaulters 40%. No incentives were given to patients, and in follow up pulmonary TB only 7% used two specimens of sputum as recommended. Most DTCs implemented standards for HIV in TB patients. Concerning standards for public health, only 33% evaluated all the highest priority contacts. Infection control plan was poorly implemented by most DTCs

Conclusion: The NTP are partially adhering to the ISTCs, so we need more effort to promote TB health services.

Keyword: International standards TB care, Baghdad.

INTRODUCTION

Tuberculosis (TB) is a major global health problem,¹ and the World Health Organization (WHO) declared TB a global emergency in 1993.² TB causes enormous social and economic disruption³ and is second only to HIV/AIDS as the greatest killer worldwide due to a single infectious agent.⁴ About one third of the world's population is infected with TB bacteria.⁵

Highly effective drugs and vaccine are available making TB preventable and curable disease⁶ but the spread of human immunodeficiency virus (HIV) during the last two decades and the emergence of Multidrug-resistant TB (MDR-TB) pose additional challenges to effective TB control programs.⁷ In 2010 Iraqi statistics showed that the mortality from TB was

12/100000 population, prevalence was 117/100000 population and incidence was 64/100000 population.⁸

The purpose of the international standards is to facilitate the effective engagement of all care providers in delivering high quality care, utilizing established best practices for patients of all ages, including those with smear-positive and smear-negative pulmonary, extrapulmonary, drug-resistant TB, and TB combined with HIV infection, as well as with other co-morbid conditions.⁹

Iraq has National Tuberculosis Programme to control TB. This study was designed in order to assess the adherence of Iraqi physicians, laboratory technicians and treatment providers who work in DTCs in Baghdad, within this programme, to the International Standards for Tuberculosis Care (ISTCs).

METHODS

This is across sectional study performed in Baghdad from 1st March 2012- 30th May 2012. Data were collected from the all 15 National TB Programme (NTP) related district TB coordinators; in addition, to 15 primary health care centres which are located in the same districts. Data were collected by the investigator during biweekly visits to the sites of the study.

After clarifying the purpose behind the study, assuring high confidentiality and having verbal consents, the study sample constituted of a physician and a lab technician in each district TB coordinator center, in addition to a treatment provider in the pharmacy of one primary health care center lies nearest to each district TB coordinator.

The tool of data collection was a structured questionnaire form that was administered and filled by the researcher through

direct interviews with the participants (physician, lab technician, and treatment provider). This questionnaire was developed by a team includes: investigator, study supervisor, NTP manager, and one of NTP epidemiologists.

The questionnaire was extracted entirely from the International Standards for Tuberculosis Care ISTC (2nd edition, 2009). The questionnaire form consisted of detailed questions related to practice in the following fields:

1. Standards for diagnosis
2. Standards for treatment
3. Standards for addressing HIV infection and other co-morbid conditions
4. Standards for public health

RESULTS

The results are represented by tables 1, 2, 3.

Table1: Distribution of district TB coordinators (DTCs) according to implementation of standards for diagnosis

Standard		Frequency	%
Diagnosis of sputum smear negative pulmonary TB*	Implemented	12	80
	Refer to central national TB control program (NTP) institute	3	20
Sputum culture for sputum smear negative (SS -ve) †	Implemented	4	26.7
	Not implemented	8	53.3
	Refer to central NTP institute	3	20
Diagnosis of childhood intrathoracic TB	sputum smear microscopy & culture‡	1	6.7
	sputum smear microscopy	10	66.7
	refer to central NTP institute	4	26.7
Diagnosis of childhood intrathoracic TB (if SS -ve)	implemented	11	73.3
	refer to central NTP institute	4	26.7

*Criteria for diagnosis of Smear negative pulmonary TB (PTB): at least 2, CXR findings consistent with TB, and lack of response to a trial of broad-spectrum antibiotics

† Sputum culture should be done for SS-ve PTB according to the international standards

‡ Correct method for diagnosis of childhood intrathoracic TB according to the ISTC

Table 2: Distribution of district TB coordinators (DTCs) according to implementation of standards for treatment

Standard		Frequency	%
Treatment supporter(DOT)*	Implemented	10	66.7
	Not implemented	5	33.3
Follow-up of defaulters	3 days	6	40
	7 days	4	26.7
	10 days	1	6.7
	14 days	2	13.3
	20 days	1	6.7
	30 days	1	6.7
Use of sputum smear to monitor pulmonary TB	Two specimens †	1	6.7
	One specimen	13	86.7
	Not applicable‡	1	6.7
Culture and drug susceptibility testing (DST) for sputum smear positive at 3 months	Implemented	14	93.3
	Not implemented	1	6.7
Clinical assessment for monitoring extrapulmonary TB and TB in children	Implemented	13	86.7
	Not implemented	2	13.3
Culture and drug susceptibility testing at start of therapy for all previously treated patients	sputum smear positive at 3months / failure / defaulter / relapse§	12	80
	Sputum smear positive at 3months / failure / defaulter	1	6.7
	Sputum smear positive at 3months / failure / relapse	1	6.7
	Failure	1	6.7

* DOT = direct observation therapy

† Correct method for monitoring pulmonary TB according to the ISTCs

‡ No lab available in the district TB coordinator center

Table3: Distribution of district TB coordinators (DTCs) according to implementation of standards for public health

Standard		Frequency	%
Highest priority contacts for evaluation	Suggestive symptoms / child<5 / immunocompromised / MDR* & XDR** contacts	5	33.3
	Suggestive symptoms / child<5 / immunocompromised	7	46.7
	Suggestive symptoms / child<5 / MDR& XDR contacts	1	6.7
	Suggestive symptoms / child<5	2	13.3
Contacts treated for presumed latent TB infection	Child<5 , persons with HIV infection***	10	66.7
	Child<5	5	33.3
Screening on TB disease among staff	CXR & tuberculin skin test†	2	13.3
	CXR only	2	13.3
	Not implemented	11	73.3
Separation‡	Implemented	1	6.7
	Not implemented	14	93.3
Facility ventilation	Natural & mechanical ventilation	8	53.3
	Natural ventilation	5	33.3
	Mechanical ventilation	2	13.3
Ultraviolet germicidal irradiation fixtures (UVGI)	Doctor rooms & laboratory room	1	6.7
	Laboratory room only	9	60
	Not available	5	33.3
Respirator availability for staff	Certified N95§	3	20
	Ordinary mask	12	80

* MDR= Multiple drugs resistance
 ** XDR= Extensive drugs resistance
 *** Indicated contacts for treatment of presumed latent TB infection according to the ISTCs
 † Correct method for screening on TB disease among staff according to ISTCs
 ‡ Separation of infectious from non-infectious TB patients according to the ISTCs
 § Recommended mask according to the ISTC

DISCUSSION

All district TB coordinators [DTCs] (100%) implemented standards of TB suspect, suspect management, extrapulmonary tuberculosis, and chest radiographic findings, concordant with the international standards, and this much higher than the other studies. The international reports are varying from 26-87 %.¹⁰⁻¹⁵ Concerning sputum smear-negative pulmonary tuberculosis, 12 (80%) of DTCs was able to diagnose sputum smear-negative PTB according to the international standards, and this agree with a study from Malawi.¹⁶ Sputum culture for sputum smear-negative PTB was implemented by 4 (26%) DTCs. This is far away from the recommendation of the international standards.

International standards recommend doing culture of gastric washings¹⁷ in the diagnosis of childhood TB. In our study only one (6.7%) DTC do following this recommendations in its practice the rate which is far less than that in Thailand 32%.¹⁸

All DTCs (100%) implemented standard of TB treatment; four drugs regiment, which is higher than Montreal, Pakistan, and Indian studies 87%, 79%, and 75% respectively.¹⁹⁻²¹

Concept of DOTS was implemented in 66.7% of DTCs in Baghdad, yet no one them used incentives to TB patients as recommended in the international standards. International standards recommend that patient with PTB should be monitored by two specimens after two months of treatment. In our DTCs only 7% are implementing this recommendation and 93% is doing only one test. These figures are comparable to that of Burkina Faso 94.3%,²² and higher than Rwanda 80%, and Pakistan 24%.^{23,24}

Our study has reported that 12 DTCs (80%) were using culture and drug susceptibility testing (DST) at the start of therapy for all previously treated patients. This is much higher than the finding in Morocco which is 10 %.²⁵ The prevalence of HIV in Iraq is low <0.1%,²¹ however 66% of our DTCs

followed the international standards of searching for HIV in patients with TB. This rate is fair in comparison to that in Ukraine 75 %, ²⁶ and Ethiopia 59%.²⁷

Evaluation of contacts to patients with TB was followed according to the international standards in 33 % of our DTCs, which is much lower than that in New York City 89%.²⁸ Contact persons to patients with TB had started isoniazid preventive therapy in 66 % of our DTCs which is higher than that in Brazil 11 %.²⁹

Concerning infection control plan, only 13% are screening their staff in consistence with the international standards using both CXR and tuberculin skin test, but still this result is higher than the finding in Malawi only 2.5%.³⁰

Our finding concerning separation (separation of infectious from non-infectious TB patients, and separation of TB patients from healthy persons in a health institute), only 7% of our DTCs were implementing this standards. This is in accordance with a study in china which stated that patient consultation areas were separated from the waiting areas only in a minority of the TB centers in China.³¹

Mechanical Ventilation were available in 8 DTCs (53%), slightly higher than in central Thailand (44.6%).³² Ultraviolet germicidal irradiation fixtures UVGI fixtures, in both doctors and laboratory rooms, were only available in 6 %. This is far away from the recommendation of the standards. N95 respirators were found in only 3 DTCs (20%), reports from China had showed that N95 respirators were not available for health care workers in TB centers.³¹

Concerning case notification, all the 15 DTCs are notifying according to the international standards, much higher than a study in north-western Somalia³³ which found that among 32 doctors who had treated TB patients, only 1 had notified the authorities.

CONCLUSION

NTP staff in Baghdad was partially adhering to the ISTCs. Poor adherence was observed mainly in the following fields :

- ❖ INH for contacts
- ❖ Giving incentives to TB patients.
- ❖ Performing of sputum for follow-up of pulmonary TB.
- ❖ Performing sputum culture for smear negative pulmonary TB and for childhood pulmonary TB.
- ❖ Implementing tuberculosis infection control plan.
- ❖ Evaluation of priority contacts.
- ❖ Tracing defaulters.

REFERENCES

1. World Health Organization. THE GLOBAL PLAN TO STOP TB 2011–2015. Geneva. WHO;2012:101.
2. Hong YP, Kwon DW, Kim SJ, Chang SC, Kang MK, Lee EP and et al. Survey of knowledge, attitude and practices for tuberculosis among general practitioners. *Tubercle and lung disease*. 1995; 67:431-435.
3. Ramesh Verma, Pardeep Khanna, and Bharti Mehta. Revised National tuberculosis control program (RNTCP)-key fact and concept, central TB Division, DGHS, MOHFW, Nirman, Bhavan, New-Delhi. *Int J Prev Med* ; 2005:1-169.
4. World Health Organization . THE GLOBAL PLAN TO STOP TB 2011–2015. Geneva. WHO;2011:258.
5. Iraqi Anti-Tuberculosis society: Guideline. Iraqi National Programme of TB Control. Iraqi Anti-Tuberculosis Society;2007:7.
6. WHO. WHO Tuberculosis profile in Iraq. <http://www.who.int/tb/datt> (access at : May 2012).
7. Park K. Park's Textbook of preventive and social Medicine. 20th edition, Jabalpur (India): Banarsidas Bhanot publication;2009:159.
8. Tuberculosis, India, RNTCP status report, central TB Division, DGHS, MOHFW, Nirman Bhavan, New Delhi;2008:10-13.
9. Tuberculosis Coalition for Technical Assistance (TBCTA). International Standards for Tuberculosis Care (ISTC). 2nd ed. The Hague; 2006: 15-32.
10. Dembele SM, Ouédraogo HZ, Combari AI, Sondo B, Macq J, Dujardin B. Are patients who present spontaneously with PTB symptoms to the health services in Burkina Faso well managed? *Int J Tuberc Lung Dis*.2006;10(4): 436-40.
11. Vandan N, Ali M, Prasad R, Kuroiwa C. Assessment of doctors' knowledge regarding tuberculosis management in Lucknow, India: A public-private sector comparison. *Public Health*.2009;123(7):484-489.
12. Huebner RE, Moeti TL, Binkin NJ, Rumisha DW. Survey of physician use of radiography and sputum smear microscopy for tuberculosis diagnosis and follow-up in Botswana. *Int J Tuberc Lung Dis*.1997;1(4):333-8.
13. Creek TL, Lockman S, Kenyon TA, Makhoa M, Chimidza N, Moeti T, Sarpong BB, Binkin NJ, Tappero JW. Completeness and timeliness of treatment initiation after laboratory diagnosis of tuberculosis in Gaborone, Botswana. *Int J Tuberc Lung Dis*.2000;4(10):956-61.
14. Chung WS, Chang RE, Guo HR. Variations of care quality for infectious pulmonary tuberculosis in Taiwan: a population based cohort study. *BMC Public Health*.2007;7: 107.
15. Simpson AJ, Watt B, Heald SH, Sudlow MF, Leitch AG. The management of pulmonary tuberculosis in adults notified in Scotland in 1993. *Respir Med*. 1998 ;92(11):1289-94.
16. Harries AD, Hargreaves NJ, Kwanjana JH, Salaniponi FM. Clinical diagnosis of smear-negative pulmonary tuberculosis: an audit of diagnostic practice in hospitals in Malawi. *Int J Tuberc Lung Dis*. 2001;5(12):1143-7.
17. International Standards for Tuberculosis Care diagnosis, treatment, public health: Developed by the Tuberculosis Coalition for Technical Assistance (TBCTA). 2nd ed. 2009, PP.15, 32
18. Lolekha R, Anuwatnonthakate A, Nateniyom S, Sumnapun S, Yamada N, Wattanaamornkiat W, Sattayawuthipong W et al. Childhood TB epidemiology and treatment outcomes in Thailand: A TB active surveillance network, 2004 to 2006. *BMC Infect Dis*.2008;8:94.
19. Richards B, Kozak R, Brassard P, Menzies D, Schwartzman K. Tuberculosis surveillance among new immigrants in Montreal. *Int J Tuberc Lung Dis*. 2005;9(8):858-64.
20. Khan JA, Hussain SF. Anti-tuberculous drug prescribing: doctors' compliance at a private teaching hospital in Pakistan. *Trop Doct*. 2003;33(2):94-6.
21. Prasad R, Nautiyal RG, Mukherji PK, Jain A, Singh K, Ahuja RC. Treatment of new pulmonary tuberculosis patients: what do allopathic doctors do in India? *Int J Tuberc Lung Dis*. 2002;6 (10): 895-902.
22. Dembele SM, Ouedraogo HZ, Combari A, Saleri N, Macq J, Dujardin B. Conversion rate at two-month follow-up of smear-positive tuberculosis patients in Burkina Faso. *Int J Tuberc Lung Dis*. 2007;11 (12): 1339-44.
23. Kayigamba FR, Bakker MI, Mugisha V, Gasana M, Schim van der Loeff MF. Sputum completion and conversion rates after intensive phase of tuberculosis treatment: an assessment of the Rwandan control program. *BMC Res Notes*. 2012;5:357.
24. Shah SK, Sadiq H, Khalil M, Noor A, Rasheed G, Shah SM, Ahmad N. Do private doctors follow national guidelines for managing pulmonary tuberculosis in Pakistan? *East Mediterr Health J*.2003;9 (4): 776-88.
25. Dooley Kelly, Lahlou Ouafae, Ghali Iraqi, Knudsen Janine. Risk factors for tuberculosis treatment failure, default, or relapse and outcomes of re-treatment in Morocco. *BMC Public Health*. 2011; 11 (1): 140-140

RECOMMENDATION

It is recommended to standardize the NTP guidelines according to the ISTCs, and this implementation need the following:

- ❖ Continuous education for all NTP staff (doctors, lab technicians, and treatment providers) on international standards guidelines.
- ❖ There is a need to supply all TB clinics in governorates with lab equipments and facilities necessary for performing sputum culture and DST.
- ❖ There is a need to build TB centers with large suitable areas to facilitate separation of the patients, and to be supplied with all necessary protective equipments and facilities.

26. Van der Werf MJ, Yegorova OB, Chechulin Y, Hasker E, Veen J, Turchenko LV. HIV testing practices of TB patients after introduction of a new testing policy in Kiev City, Ukraine. *Int J Tuberc Lung Dis.* 2005;9 (7): 733-9.
27. Deribew A, Negussu N, Melaku Z, Deribe K. Investigation outcomes of tuberculosis suspects in the health centers of Addis Ababa, Ethiopia. *PLoS One.* 2001;6 (4):e18614.
28. Anger HA, Proops D, Harris TG, Li J, Kreiswirth BN, Shashkina E, Ahuja SD. Active case finding and prevention of tuberculosis among a cohort of contacts exposed to infectious tuberculosis cases in New York City. *Clin Infect Dis.* 2012;54 (9): 1287-95.
29. Saraceni V, Pacheco AG, Golub JE, Vellozo V, King BS, Cavalcante SC, Eldred L, Chaisson RE, Durovni B. Physician adherence to guidelines for tuberculosis and HIV care in Rio de Janeiro, Brazil. *Braz J Infect Dis.* 2011;15 (3): 249-52.
30. Harries A.D, Hargreaves N.J, Gausi F, Kwanjana J.H. Preventing tuberculosis among health workers in Malawi. *Bulletin of the World Health Organization* 2002;80 (7): 526-531
31. He GX, van denHof S, van der Werf MJ, Wang GJ, Ma SW, Zhao DY, Hu YL, Yu SC, Borgdorff MW. (2010) Infection control and the burden of tuberculosis infection and disease in health care workers in china: a cross-sectional study. *BMC Infect Dis.* 2010;10:313.
32. Jiamjarasrangsri W, Bualert S, Chongthaleong A, Chaiandamporn A, Udomsantisuk N, Euasamarnjit W. Inadequate ventilation for nosocomial tuberculosis prevention in public hospitals in Central Thailand. *Int J Tuberc Lung Dis.* 2009;13(4):454-9.
33. Suleiman BA, Houssein AI, Mehta F, Hinderaker SG. Do doctors in north-western Somalia follow the national guidelines for tuberculosis management? *East Mediterr Health J.* 2003;9(4):789-95.