

Enhancing Childhood TB Notifications by Strengthening Linkages with Large Hospitals in Pakistan

—Childhood TB in Large Hospitals, Pakistan

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Abstract

To improve childhood Tuberculosis management, the National Tuberculosis Program implemented a package of interventions Hospital DOTS linkages (HDL) in 2015 in 144 tertiary and secondary care hospitals across Pakistan. This included systematic engagement of hospital administration and all specialist doctors, staff training and regular facility-based review meetings. HDL was associated with 35% increase in childhood TB notifications in 2015 (versus 2014) in HDL sites as compared to 16% increase in non-HDL sites. The increase was seen across provinces, age-groups and sexes, but did not correlate with presence of Xpert MTB/RIF[®] or “screeners” (health workers deployed to screen children for TB).

Keywords

Tuberculosis, Childhood Tuberculosis, Hospital DOTS Linkages, Pakistan, SORT IT

1. Introduction

About one million of the 10.4 million incident Tuberculosis (TB) patients in 2015 were children [1]. Childhood TB is often neglected due to atypical clinical

presentation and inability to expectorate sputum among children, the need for appropriate diagnostic facilities and specialists, focus of national programs on bacteriologically-confirmed TB and poor estimates of disease burden [2] [3] [4].

With about 40% of per 187 million people under the age of 15 years and at risk from the disease, the issue of childhood TB is of significance for Pakistan [5]. Analysis of programme data indicates that secondary and tertiary care hospitals (TCH), while limited in number, contribute to managing about half of childhood TB cases in Pakistan due to large patient volumes, availability of multiple diagnostics and pediatricians [6]. But, their engagement with National TB Programme (NTP) has been limited due to poor physician response, limited ownership from the hospital administration and general lack of priority and neglect associated with TB-related activities [7]. To address this, NTP implemented a package of interventions (hereafter referred as Hospital DOTS Linkages, HDL) in 2015: 1) Engagement of hospital administration and specialists to prioritize TB; 2) Training of hospital staff to identify presumptive TB patients; 3) Defining patient-flows and staff roles and responsibilities; 4) Regular facility-based review meetings by NTP staff. We aim to assess the effect of HDL on percent change in childhood TB notifications in 2015 compared to 2014 (pre-intervention).

2. Methodology

The study was a retrospective record review of routine TB07 data. This data was sourced from 144 HDL sites from the 4 provinces and Federal capital. These include 43 tertiary care hospitals and 101 District Headquarter Hospitals. 3 regions of GB, FATA and AJK were excluded due to differences in reporting mechanisms and lack of guideline implementation. The outcome of this study was notified childhood TB cases before and after guideline revision, disaggregated by province, type of health facility, age, sex, availability of GeneXpert and screeners. Data was extracted TB07 registers and entered in Epidata v3.1. Descriptive analysis was done in EpiAnalysis V2.2. Permission to use program data was received from NTP, Pakistan. Ethics approval was obtained from The Union Ethics Advisory Group, Paris, France.

3. Results

The childhood TB notifications increased by 35% at HDL sites compared to a 16% increase in non-HDL sites under study (Table 1). The increase was marginally higher in TCHs (38%) than DHQs (32%). All provinces and regions showed an increase barring TCHs in Khyber Pakhtunkhwa. Table 2 indicates that the increase was marginally higher among males. The increase in notifications did not appear to correlate with age, the availability of Xpert MTB/RIF or “screeners” (trained health care workers deployed to screen the child contacts of adult TB cases visiting the hospital).

Table 1. Childhood TB case notifications from hospital DOTS linkage (HDL) sites in 2014 (before intervention) and 2015 (after intervention), disaggregated by site type, Pakistan.

Variable	Reporting Sites (n)	2014 (a)	2015 (b)	Percent change [(b – a)/a]*100
Pakistan	1026	25,842	32,522	26
HDL Sites	144	13,601	18,298	35
Non-HDL Sites	822	12,241	14,224	16
Total Tertiary Care Hospitals	43	5522	7617	38
Total District Hospitals	101	8079	10,681	32
Punjab	46	4061	5442	34
Tertiary Care Hospitals	16	2206	2976	35
District Hospitals	30	1855	2466	33
Sindh	36	4619	6612	43
Tertiary Care Hospitals	17	2724	3931	44
District Hospitals	19	1895	2681	38
Khyber Pakhtunkhwa	29	4079	4906	20
Tertiary Care Hospitals	6	238	210	-12
District Hospitals	23	3841	4696	22
Baluchistan	31	737	1173	59
Tertiary Care Hospitals	2	249	335	35
District Hospitals	29	488	838	72
ICT² Tertiary Care Hospitals	2	105	165	57

¹Data for Punjab, Sindh, Baluchistan, Khyber Pakhtunkhwa & ICT, all public sector management units; ²Islamabad Capital Territory.

Table 2. Change in childhood TB case notifications from hospital DOTS linkage (HDL) sites in 2014 (before intervention) & 2015 (after intervention), disaggregated by sex, age, availability of screeners and Xpert MTB/RIF[®], Pakistan.

Variable	2014 (a)	2015 (b)	Percent change [(b – a)/a]*100
Total	13,601	18,298	35
Sex			
Male cases	6209	8650	39
Female cases	7392	9648	30
Age Groups			
0 - 4 years	4450	6103	36
5 - 14 years	9151	12,195	33
Cases by availability of screeners¹			
Yes	3753	4974	33
No	9848	13,324	35
Availability of Xpert MTB/RIF[®]			
Absent in both years	7841	10,530	34
Present in both years	4821	6555	36
Present in 2015 only	939	1213	29

¹Identification and active segregation of coughers in OPD waiting areas/wards, 32 sites had screeners and 112 sites had no screeners in both years.

4. Discussion

This study found that HDL was associated with a 35% increase in childhood TB notification, twice higher than non-HDL sites. These findings are important as no other previous study has assessed the performance of the HDL intervention at the national level, particularly for children in our setting. All provinces registered an increase in cases although the extent was variable. This increase was seen in both TCHs and DHQs except in Khyber Pakhtunkhwa where TCH reporting declined probably due to resignation of implementing staff mid-year.

Generally, TCHs are often the best staffed and equipped health facilities, catering to large volumes of patients and thus a priority for national programs [7]. However, being complex systems, engaging TCHs has remained difficult, with issues in collaboration within the TCH, as well as with health department under whose purview they operate [8]. The HDL model was designed to involve TCHs and has been implemented successfully in Indonesia as well [9]. The key factors for successful implementation were defining specific roles and responsibilities within TCH, ensuring all presumptive cases were routed to the facility DOTS centre and engagement of hospital administration to increase their ownership [9]. The revised guidelines developed by NTP Pakistan sought to systemize these factors, as well as attempt to expand the internal network beyond chest clinics and pulmonology departments to include all specialities.

These findings have implications for passive case finding under HDL as a supplement to Active Case Finding mechanisms due to its cost effectiveness [10]. We did not find evidence of positive association with Xpert MTB/RIF[®], which might have probably increased the number of bacteriologically confirmed TB cases. A disaggregated analysis by type of TB would have been helpful in this regard, but could not be done due to lack of data. The future revisions of TB recording and reporting should address this limitation. Also, we did not find any association with “screeners” who might have contributed to the total number of presumptive TB cases identified and referred. This needs further evaluation.

5. Conclusion

HDL was associated with an increase in childhood TB case notification in secondary and tertiary care hospitals of Pakistan. We hope this will positively impact Pakistan’s overall efforts towards TB Control by addressing the burden of childhood TB.

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References

- [1] World Health Organization (2016) Global Tuberculosis Report. WHO, Geneva.
- [2] Nelson, L.J. and Wells, C.D. (2004) Global Epidemiology of Childhood Tuberculosis. *The International Journal of Tuberculosis and Lung Disease*, **8**, 636-647.
- [3] World Health Organization (2013) Roadmap for Childhood Tuberculosis towards Zero Deaths. WHO, Geneva.
- [4] Dodd, P.J., Gardiner, E., Coghlan, R. and Seddon, J.A. (2014) Burden of Childhood Tuberculosis in 22 High-Burden Countries: A Mathematical Modelling Study. *Lancet Global Health*, **2**, e453-e459. [https://doi.org/10.1016/S2214-109X\(14\)70245-1](https://doi.org/10.1016/S2214-109X(14)70245-1)
- [5] National Institute of Population Studies (2013) Pakistan: Demographic and Health Survey 2012-13. Government of Pakistan, Islamabad.
- [6] Fatima, R.Q.E., Enarson, D.A. and Bissell, K. (2011) Comprehensiveness of Primary Services in the Care of Infectious Tuberculosis Patients in Rawalpindi, Pakistan. *Public Health Action*, **1**, 1099-1104. <https://doi.org/10.5588/pha.11.0005>
- [7] Probandari, A., Lindholm, L., Stenlund, H., Utarini, A. and Hurtig, A.-K. (2010) Missed Opportunity for Standardized Diagnosis and Treatment among Adult Tuberculosis Patients in Hospitals Involved in Public-Private Mix for Directly Observed Treatment Short-Course strategy in Indonesia: A Cross-Sectional Study. *BMC Health Services Research*, **10**, 113. <https://doi.org/10.1186/1472-6963-10-113>
- [8] Uplekar, M. (2008) Stopping Tuberculosis: Time to Turn Urgent Attention to Hospitals. *The International Journal of Tuberculosis and Lung Disease*, **12**, 986.
- [9] Irawati, S.R., Basri, C., Arias, M.S., Prihatini S., Rintiswati, N., Voskens, J., *et al.* (2007) Hospital DOTS Linkage in Indonesia: A Model for DOTS Expansion into Government and Private Hospitals. *The International Journal of Tuberculosis and Lung Disease*, **11**, 33-39.
- [10] Rie, V. and Hanrahan, C. (2014) Active Case Finding for Tuberculosis: What Is the Most Informative Measure for Policy Makers? *The International Journal of Tuberculosis and Lung Disease*, **18**, 377-378.