Published in final edited form as:

Int J Tuberc Lung Dis. 2012 May ; 16(5): 625–627. doi:10.5588/ijtld.11.0655.

Evaluation of integrated registers for tuberculosis and HIV surveillance in children, Ethiopia, 2007–2009

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SUMMARY

In 2008, Ethiopia implemented tuberculosis (TB) treatment registers that included columns for recording human immunodeficiency virus (HIV) test results (integrated registers) to replace the previous system of separate TB and HIV registers (pre-integration registers). We compared the proportion of children with documented HIV rapid test results at eight hospitals before and after adopting the integrated registers. HIV status was more consistently documented in the integrated registers; however, HIV status for infants aged <18 months could not be assessed, as the registers did not capture results from polymerase chain reaction-based testing. Recording procedures should be revised to document age-appropriate HIV diagnostic results and ensure referral for appropriate care.

RÉSUMÉ

En 2008, l'Ethiopie a mis en œuvre des registres de traitement de la tuberculose (TB) comportant des colonnes pour l'enregistrement des résultats des tests du virus de l'immunodéficience humaine (VIH; registres intégrés). Antérieurement, on utilisait des registres séparés pour la TB et le VIH (registres avant l'intégration). Nous avons comparé la proportion d'enfants où les résultats du test rapide du VIH étaient documentés dans huit hôpitaux avant et après l'adoption des registres intégrés. Le statut VIH est plus régulièrement documenté dans les registres intégrés; toutefois, le statut VIH des nourrissons âgés de <18 mois n'a pas pu être évalué, car les registres ne capturaient pas les résultats des tests basés sur la réaction de polymérase en chaîne. Il faudrait réviser les procédures d'enregistrement afin de documenter des résultats de diagnostic VIH appropriés pour l'âge et de garantir le transfert vers les soins appropriés.

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RESUMEN

En el 2008, se introdujeron en Etiopía registros de tratamiento de la tuberculosis (TB) que comportan columnas destinadas a consignar el resultado de la prueba diagnóstica de la infección por el virus de la inmuno deficiencia humana (VIH; registros integrados). Anterior mente, se utilizaban registros independientes para la TB y la infección por el VIH (registros preintegración). En el presente estudio se comparó la proporción de niños con resultados consignados sobre la prueba rápida del VIH en ocho hospitales, antes y después de la adopción de los registros integrados. La consignación del estado frente a la infección por el VIH fue más constante en los registros integrados; sin embargo, no fue posible eva luarlo en los lactantes de <18 meses de edad, porque los registros no recogen los resultados de la prueba basada en la reacción en cadena de la polimerasa. Es preciso mo dificar los procedimientos de consignación, con el objeto de documentar los resultados apropiados en función de la edad y facilitar la remisión para un tratamiento adecuado.

Keywords

pediatric; tuberculosis; TB; HIV

GLOBALLY, an estimated 11% of tuberculosis (TB) cases occur among children (age <15 years).[1,2] In high-burden settings, TB is a preventable cause of excess morbidity and mortality among children. The human immunodeficiency virus (HIV) is an important risk factor for the acquisition of TB, and is associated with an increased risk of death.[1,3] However, data on the prevalence of children with both TB disease and HIV infection (i.e., TB-HIV) are limited, as TB-HIV collaborative efforts have largely focused on adults, and reported TB-HIV surveillance data are generally not disaggregated by age.[3] In Ethiopia, an estimated 17% of people with TB are also infected with HIV; however, estimates of TB-HIV among children are not available.[4] The revised World Health Organization (WHO) guide to monitoring and evaluation of TB-HIV collaborative activities recommends incorporating HIV variables into standard TB treatment registers and disaggregating indicators for TB-HIV collaborative activities for children and adults.[5]

Ethiopia began replacing their pre-integration TB and HIV registers with integrated TB-HIV registers in TB treatment facilities in September 2008. The impact of the introduction of integrated TB registers on the quality of TB-HIV data for children is not known. We evaluated the impact of replacing the pre-integration registers with integrated TB-HIV registers on the surveillance of HIV infection among children with TB. We compared the completeness of HIV test result information for children treated for TB registered in the pre-integration and integrated registers, and calculated the proportion of children with TB who had HIV infection from the integrated registers.

ASPECTS OF INTEREST

We selected clinic sites supported by a PEPFAR (President’s Emergency Plan for AIDS Relief) implementing partner (the International Center for AIDS Care and Treatment Programs) that satisfied the following criteria: 1) >10 children reported with TB in the

previous quarter, 2) out-patient TB treatment provided, and 3) both pre-integration and integrated register data available (n = 8). During September–October 2009, we reviewed all registers used for TB treatment registration between September 2007 and August 2009 and abstracted information from entries where age was <15 years.

For patients recorded in the pre-integration registers, HIV data were obtained from separate TB and HIV registers. We were unable to link patient TB data and their HIV test results easily, as HIV registers do not contain patient names; we therefore linked the TB and HIV data by matching patient age, sex and date of registration in the pre-integration TB register with age, sex and date of registration in the HIV register. If HIV data were recorded in the 'Remarks' column of the pre-integration TB register, the data were collected from that source. We also performed semi-structured interviews with TB clinic staff at participating facilities to assess their perception of the integrated registers for collecting TB-HIV information.

The protocol was approved by the US Centers for Disease Control and Prevention, and was determined not to be human subjects research.

TB-HIV data were analyzed separately for children based on age < or ⩾18 months. This is because rapid HIV tests (antibody tests) can give false-positive results in infants aged <18 months due to maternal antibodies against HIV that cross the placenta during pregnancy in women with HIV.[6] A definitive diagnosis of HIV infection in infants aged <18 months exposed to HIV requires a direct test, such as polymerase chain reaction (PCR).[6]

RESULTS AND DISCUSSION

A total of 279 children were registered in the pre-integration registers and 217 in the integrated registers; of these, respectively 161 (57.7%) and 207 (95.4%) had documented HIV test results. The percent age of pediatric patients with a documented HIV test result ranged from 0% to 82% (median 43%, interquartile range [IQR] 30–75) in the pre-integration registers and from 86% to 100% (median 96%, IQR 90–100) in the integrated registers. At each site, the percentage of children with documented HIV status was higher after the switch from the separate TB and HIV registers to an integrated TB-HIV register (Figure 1).

Of the 231 children registered from September 2008 to August 2009, 217 (94%) were recorded in integrated registers. Children represent 9% of all patients registered in the integrated registers during the same period (total adults and children: n = 2340). TB clinic staff uniformly reported that the integrated register was easier to use than the separate registers both for recording data and for summarizing the data for quarterly reports on TB-HIV.

In integrated registers from all sites combined, 192/201 (96%) children aged ⩾18 months had a rapid HIV test result recorded. Of these, 24 (12%) were also infected with HIV (range 0–30% per site). Sixteen children aged <18 months were recorded in the integrated TB registers, representing 7% of all children registered. HIV test results were recorded for 15/16

infants (94%), of whom two (13%) had a reactive rapid HIV test indicating perinatal HIV exposure and possible infection (Figure 2).

It is clinically important to classify infants by one of three HIV status categories—non-infected, infected, or exposed—as appropriate care differs for each of these groups. For surveillance, a definitive diagnosis of HIV infection is required to accurately quantify the prevalence of TB-HIV. Although dried blood spot PCR testing was available at the antiretroviral treatment clinics of all hospitals visited, the integrated TB register only contains a variable for rapid HIV test results and not for PCR test results. It was therefore not possible to verify whether age-appropriate HIV testing algorithms were being used for infants with TB, and it was not possible to accurately quantify rates of HIV infection among infants with TB.

CONCLUSION

Documentation of HIV status among children with TB at all sites visited in Ethiopia improved after the implementation of integrated TB treatment registers that include HIV test results. Inclusion of HIV-related variables in paper TB registers, as recommended by the WHO, may be useful in other resource-limited settings to provide more complete information on TB-HIV in children. However, for infants aged <18 months, the ability to capture the results of PCR testing should be added to TB treatment registers to allow accurate surveillance for TB-HIV among all children, including infants, and to ensure referral for appropriate care.

Acknowledgements

The authors thank K Gutama and B Kiflu for data collection and C Heilig for figure preparation. Funding for this study was provided by the President’s Emergency Plan for AIDS Relief, Global AIDS Program of Ethiopia.

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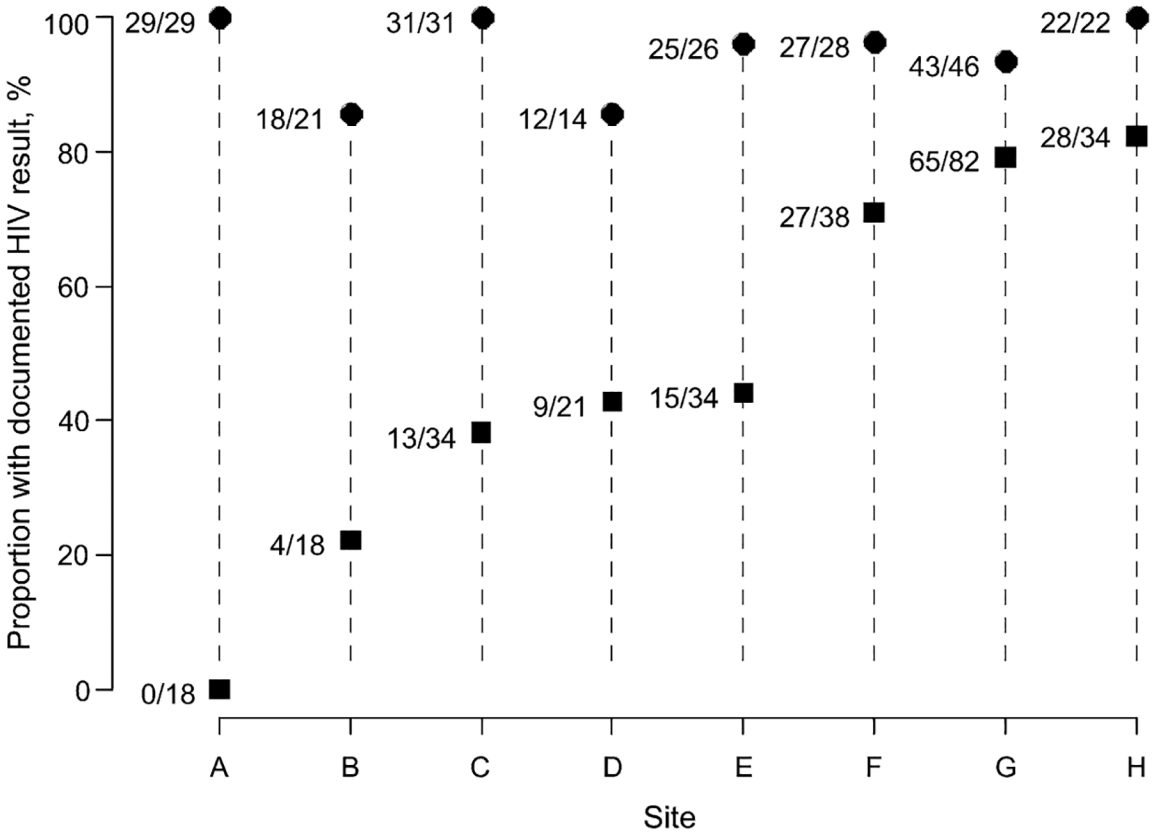

Figure 1.

Proportion of children with a documented rapid HIV test result in integrated TB registers (●) compared to in pre-integration TB treatment and HIV status registers (■), September 2007–August 2009. HIV = human immunodeficiency virus; TB = tuberculosis.

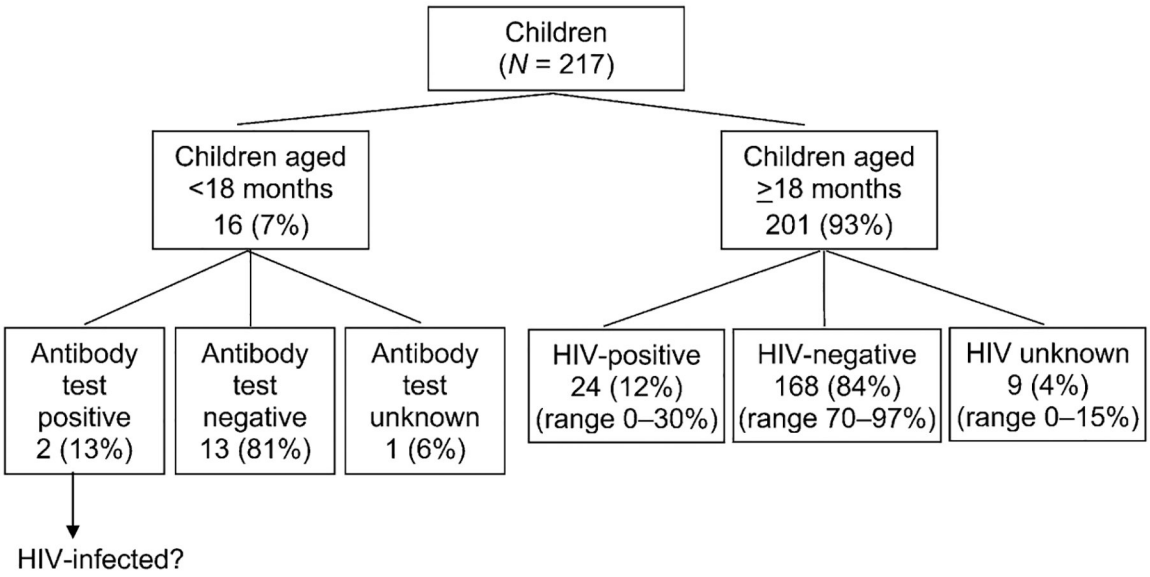

Figure 2.

Prevalence of HIV infection among children treated for TB, by age group, in integrated TB registers, September 2008–August 2009. HIV = human immunodeficiency virus; TB = tuberculosis.