



Barriers and solutions to finding rifampicin-resistant tuberculosis cases in older children and adolescents

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Little is known about the barriers to post-exposure management of rifampicin-resistant tuberculosis (RR-TB) in older children and adolescents. We report on implementation lessons from a pilot programme targeting household-exposed individuals aged 6–18 years in Khayelitsha, South Africa. Barriers included misperceptions regarding risk of exposure, multiple research and implementation stakeholders, additional workload for an overburdened healthcare system, logistical issues faced by families, and insufficient human and financial resources. Solutions to these barriers are possible, but creativity and persistence are required. Our experience can guide others looking to roll-out care for children and adolescents exposed to RR-TB.

Of the estimated 25 000 children and adolescents who become sick with rifampicin-resistant tuberculosis (RR-TB) each year, only approximately 2000 (8%) are diagnosed and started on treatment.¹ With the global strategy to “End TB” by 2035, there has been significant attention paid to “finding the missing cases,” and a number of active case finding strategies have been devised to better reach people who have RR-TB, and successfully treat them for their disease.²

One strategy for increasing case finding is post-exposure management among persons exposed to RR-TB in the household.³ Although the World Health Organization (WHO) has recommended this as an urgent priority for many years, little action has been taken to implement systematic post-exposure management in most settings.⁴ Programmes on household post-exposure management usually focus on children living with human immunodeficiency virus (HIV) or those under five years of age,⁵ although it is well-known that TB rates increase in adolescents,⁶ and that children of all ages are at increased risk of falling ill after exposure to RR-TB.⁷ Furthermore, older children and adolescents may require different strategies when it comes to post-exposure management.⁸ As little is known about the barriers to and facilitators of post-exposure management of RR-TB in this population, we undertook a pilot programme in Khayelitsha, South Africa, among older children and adolescents exposed to RR-TB in their homes. We report important implementation lessons here.

SETTING AND METHODS

This pilot programme took place in the South African township of Khayelitsha, located near Cape Town,

which has a high rate of RR-TB (approximately 55 cases per 100 000 population annually are diagnosed and started on treatment). Médecins Sans Frontières (MSF), a medical humanitarian organisation partnered with the Departments of Health of the Province of the Western Cape and the City of Cape Town to pilot a post-exposure management programme for older children and adolescents (age 6–18 years), who were exposed to RR-TB in their households. Between 1 November 2018 and 1 June 2019, 20 older children and adolescents were offered post-exposure management that included TB symptom screening, chest X-ray, sputum testing with Xpert® MTB/RIF (Cepheid, Sunnyvale, CA, USA) and 12 months of longitudinal follow-up to detect incident TB. The implementation of this pilot programme and barriers were explored using process documentation and analysis. Modified “Plan, Do, Study, Act” cycles⁹ were used during implementation to develop solutions to overcome barriers, and these solutions are also reported.

RESULTS

Only 10% of the eligible contacts participated in the pilot programme. A number of barriers were identified. These included 1) misperceptions by healthcare workers and guardians regarding household exposure risk in older children (risk perceived as low); 2) multiple research and implementation stakeholders in the programme setting, leading to difficult engagement and poor buy-in of healthcare facilities (too many research studies with minimal collaboration between different research teams); 3) additional workload for an already overburdened healthcare system, leading to a lack of endorsement; 4) potential exposure of healthy children to sick individuals in the healthcare facilities (lack of triaging and child-friendly preventive services); 5) logistical issues faced by families in navigating screening and diagnostic pathways (too many steps involved); 6) children and guardians required to miss school and work in order to attend the healthcare facility for TB screening (lack of child-friendly services); and 7) insufficient human and financial resources to ensure pilot programme success.

The real-time problem-solving strategies that were identified included engagement in health promotion and educational activities for the community and medical staff, focusing on the risks of TB among this population; collaboration among the various stakeholders involved in the programme setting to ensure

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KEY WORDS

vulnerable populations; RR-TB; post-exposure management; Khayelitsha; South Africa

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TABLE Barriers encountered during the implementation of the rifampicin-resistant tuberculosis active case finding strategy along with possible solutions to overcome barriers

Number	Barriers	Involved sector	Possible solutions
1	Misperceptions by healthcare workers and guardians regarding household exposure risk in older children	<ul style="list-style-type: none"> • Health system • Community • Individual 	Health promotion initiatives and sensitisation of the community and medical staff focusing on the risk of TB among this age group
2	Multiple research and implementation stakeholders in the programme setting, leading to difficult engagement and poor buy-in of healthcare facilities	<ul style="list-style-type: none"> • Health system • Research community 	Collaboration among stakeholders in order to streamline activities
3	Additional workload for an already overburdened healthcare system	<ul style="list-style-type: none"> • Health system 	Afterhours and/or weekend mobile TB screening clinics for contacts aged 6–18 years Community healthcare workers to do follow-up screenings in the contact's household
4	Potential exposure of healthy children to sick individuals in the healthcare facilities	<ul style="list-style-type: none"> • Health system • Individual 	Afterhours and/or weekend mobile TB screening clinics for contacts aged 6–18 years
5	Logistical issues faced by families in navigating screening and diagnostic pathways	<ul style="list-style-type: none"> • Health system • Community • Individual 	Community healthcare workers to do follow-up screenings in the contact's household
6	Children and guardians obliged to miss school and work in order to attend the healthcare facility for TB screening	<ul style="list-style-type: none"> • Health system • Community • Individual 	Afterhours and/or weekend mobile TB screening clinics for contacts aged 6–18 years School-based TB screening initiatives Strengthening links between the Departments of Health and Education to promote school-based TB screening
7	Insufficient human and financial resources to successfully implement the pilot programme	<ul style="list-style-type: none"> • Health system • Programme implementer 	Advocate for and secure necessary personnel, equipment and funding for programme implementation Ensure that the model of service delivery is feasible with the given resources

streamlining of activities; opening of afterhour and/or weekend (mobile) clinics targeted at providing TB screening during hours that are more convenient for older children and adolescents, and their families; employment of community healthcare workers to conduct follow-up screenings at the household level; promotion of and engagement in school-based TB screening initiatives that ensure the strengthening of the links between the Departments of Health and Education in order to encourage school-based TB screening; and advocacy to secure the necessary personnel, equipment and funding for programme implementation to ensure that the model of service delivery is feasible (Table).

MSF is currently working jointly with the Health Departments of the Province of the Western Cape and the City of Cape Town to ensure that this model is adapted to best suit the needs of the population and communities it is meant to serve, while making use of the existing resources. Possible collaboration with other stakeholders in Khayelitsha is being investigated and the possibility of afterhours/weekend clinics focused on screening for TB and RR-TB are being proposed. Furthermore, health promotion strategies are being devised in order to ensure TB risks in this population are understood.

CONCLUSIONS

Urgent implementation of active case finding among persons exposed to RR-TB in the household is needed to eliminate TB. Older children and adolescents are vulnerable populations, with special needs concerning RR-TB and post-exposure management. Our pilot programme found that the implementation of a

post-exposure management for older children and adolescents exposed to RR-TB in their households was challenging due to various barriers to implementation. While what is described here comes from a small population living in an urban township, thus limiting its generalisability to other populations, our findings may help other programmes address similar barriers more rapidly to ensure optimal implementation of case finding activities in this population. Older children and adolescents should be prioritised in RR-TB case finding activities, but tailored strategies are needed to reach this population. It is hoped that our experience in Khayelitsha with this population can guide others looking to roll-out best practices for children and adolescents exposed to RR-TB.

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On connaît mal les entraves à la prise en charge post-exposition de la tuberculose résistante à la rifampicine (RR-TB) chez les enfants plus âgés et les adolescents. Nous rapportons les leçons de la mise en œuvre d'un programme pilote ciblant les individus exposés dans leurs foyers, âgés de 6–18 ans, à Khayelitsha, Afrique du Sud. Les obstacles ont inclus des perceptions erronées à propos du risque d'exposition, la multiplicité des partenaires de recherche et de mise

en œuvre, la charge de travail supplémentaire pour un système de santé déjà surchargé, les problèmes logistiques auxquels sont confrontées les familles, et l'insuffisance des ressources humaines et financières. Il y a des solutions possibles à ces obstacles mais elles demandent de la créativité et de la détermination. Notre expérience peut guider ceux qui veulent lancer la prise en charge des enfants et des adolescents exposés à la RR-TB.

Se conoce poco sobre los factores que obstaculizan la atención después de la exposición a un caso de tuberculosis resistente a rifampicina (RR-TB) en los niños mayores y los adolescentes. En el presente artículo se describen las enseñanzas aprendidas durante la ejecución de un programa piloto dirigido a los contactos domiciliarios expuestos entre los 6 y los 18 años de edad, en Khayelitsha, Suráfrica. Entre los obstáculos observados se pueden citar las percepciones equivocadas sobre el riesgo de exposición, la

multiplicidad de interesados directos en la investigación y la ejecución, la carga de trabajo adicional en un sistema de salud sobrecargado, los problemas organizativos afrontados por las familias y la insuficiencia de recursos humanos y de financiamiento. Las soluciones a estos problemas son posibles, pero exigen creatividad y persistencia. Esta experiencia puede orientar a otros equipos que intenten poner en marcha la atención de los niños y los adolescentes expuestos a la RR-TB.