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Administering Second-Line Antituberculous Medications to Children with Multidrug-Resistant Tuberculosis: A Qualitative Study

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“I had one father tell me his boy eats more pills than food for breakfast.”
TB physician, 32 years old, South Africa

INTRODUCTION

There are more than 65,000 children living with multidrug-resistant tuberculosis (MDR-TB) in the world today, and, while children have excellent outcomes from MDR-TB therapy, fewer than 1% are diagnosed and treated for their disease.

Even when a child is started on a regimen containing second-line drugs to treat MDR-TB, there are significant barriers to completing successful therapy and achieving cure. There are limited data on the pharmacokinetics of most second-line TB drugs in children. Furthermore, almost none of these drugs is available in a child-friendly formulation.

This poster presents data and quotes from a small qualitative study on administration of second-line drugs to children under program conditions from five countries. We sought to describe the challenges of administering these medications in the absence of pediatric formulations.

METHODS

Open-ended interviews were conducted with physicians and nurses from National TB Programs in Peru, South Africa, Georgia, Romania and Bangladesh. Questions focused on challenges of administering second-line drugs to children. Detailed interview notes were kept and analyzed for theme and content according to standard anthropologic techniques.

RESULTS

We completed interviews with five nurses and four physicians (N=9). All were staff members at referral hospitals for MDR-TB. Participants identified major themes concerning the administration of second-line drugs to children (see Table 1). All participants reported spending at least 10% of their time dedicated to problems with administering second-line medications to children. All clinicians were concerned with preparing medications and having to deliver injections; however, three nurses (33% of interviewed clinicians) noted that the children fared better than expected with the injections.

“It is so hard for these children. And the doctors, they all worry about the diagnosis and resistance patterns. But really, the work starts when we need to give these medicines to the little ones. These sweet [children] are tougher than you think and they put up with so much. But all the crushing and mixing and grinding and swallowing and shots. It is so much for them and their mothers to bear.”
TB nurse, 47 years old, Georgia

Table 1: Themes reported by clinicians concerning administration of second-line medications to children

	Frequency (n=9)	Percent
1. Difficulties preparing the medications	9	100%
1a. Pill burden	9	100%
1b. Crushing the tablets and mixing the powder for administration	8	88.9%
1c. Cutting the tablets	6	66.7%
2. Concerns about injections	9	100%
2a. Limited options for injection sites in small children	9	100%
2b. Pain of injections	9	100%
3. Difficulties administering the drug(s) to the child	7	77.8%
4. Difficulties figuring out the correct dosage of medications	6	66.7%
5. Children vomiting after ingesting the medicines	5	55.6%

“I spend hours in the morning preparing the doses for the children. I cannot imagine how their mothers do it at home.”
TB nurse, 27 years old, Georgia



Luka (7), Maryam (18 months), and brother (not pictured) were fighting extensively drug-resistant TB; they are now cured. Their clinician was interviewed for this study.

CONCLUSIONS

- Trained health professionals reported significant problems administering second-line antituberculous drugs to children.
- All health professionals reported spending a large portion of their time attempting to overcome these administration difficulties, placing a great burden on understaffed medical teams.
- There is an urgent need to provide products that can be dosed and administered more easily without compromising efficacy and safety.
- Ideally, child-friendly medications should be in a dispersible solid form, facilitating dosing across different weight groups.
- Ultimately, the MDR-TB treatment regimen should be all-oral, with child-friendly medications.
- Without pediatric formulations for drug-resistant TB treatment, children will continue to die needlessly of this treatable infection, and the target of zero TB deaths, new infections and suffering will remain elusive.

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