

## Child-Friendly Tuberculosis Medicines (FDC)

Fixed Dose Combination (FDC) therapy for the treatment of drug-sensitive tuberculosis in children

### Problem

Multidrug regimens are needed to cure tuberculosis (TB) and prevent future drug resistance. The three most common drugs to treat childhood TB consist of rifampicin (R), isoniazid (H), and pyrazinamide (Z). Another drug, ethambutol (E), is added in many settings where there is a high prevalence of co-infection with HIV/AIDS. Treatment is given for 6 months. Unfortunately, the combination of three to four medications results in children taking between 3-9 pills per day. The long duration of treatment exacerbates some of the challenges children experience, such as the insufficient quantity and availability of all four of these medications, as well as the lack of child-friendly formulations. Such high pill volumes are challenging for patients to take consistently for 6 months, especially for children, which sometimes results in low adherence or treatment default. Interruptions in treatments can also lead to drug resistance. In 2010 the World Health Organization (WHO) increased the recommended pediatric dose, leading to a lack of adequate pediatric doses. The absence of appropriate doses for children often requires cutting or crushing adult medications to achieve the appropriate pediatric dose, making the medicines taste bitter and compounding the adherence challenge. Until recently, three-drug FDCs appropriate for children were not available.

### Treatment Rationale

A child-friendly fixed dose combination (FDC) therapy reduces the number of pills that need to be taken from many into a few tablets, which are prescribed depending on a child's weight. Having an FDC therapy approach to treatment also reduces the risk of splitting doses or only selectively taking certain drugs in the regimen, which can improve treatment outcomes. Depending which "weight band" a child fits into, the number of FDC tablets that are prescribed can be anywhere from 2 to 5 tablets per day, and sometimes even less in infants. Pediatric FDCs are flavored and can be dissolved into water. Using medicines designed for children in the correct dose simplifies drug management regimens and improves compliance rates, decreasing poor outcomes and the risk of drug resistance from nonadherence.

### Application in High TB Burden Settings

Recently, two- and three-drug FDCs appropriate for children with TB have become available. The development of these medicines was overseen by TB Alliance, and they are now available from the Stop TB Global Drug Facility and from the manufacturer, Macleods. Uptake and adoption are under way, but continued efforts to ensure availability of the FDCs in all countries are still needed.

### TREATMENT



PREVENTION DIAGNOSTIC TREATMENT



### GLOBAL ANNUAL DEATHS ASSOCIATED WITH PEDIATRIC TB:

	NUMBER
Children who acquire TB	at least 1,000,000
Children who die of TB	210,000

## REPRESENTATIVE PRODUCTS

### FDC Manufacturer Prices

MAKE	MODEL	PROCUREMENT PRICE	TECH	STATUS	NOTES
<b>Generic</b>	Rifampicin/Isoniazid/Pyrazinamide (14x6); Box of 84 tablets	\$2.21	Rifampicin60mg/Isoniazid 30mg/Pyrazinamide/150mg dispersible film uncoated tablets	Marketed	Stop TB referenced price 2016
<b>Generic</b>	Rifampicin/Isoniazid/Pyrazinamide (3x28); Box of 84 tablets	\$1.96	Rifampicin 60mg/Isoniazid 30mg/Pyrazinamide/150mg dispersible film, uncoated tablets	Marketed	Stop TB referenced price 2016
<b>Generic</b>	Rifampicin/Isoniazid/Pyrazinamide (3x28); Box of 84 tablets	\$2.95	Rifampicin 75mg/Isoniazid 50mg/Pyrazinamide/150mg dispersible film, uncoated tablets	Marketed	Stop TB referenced price 2016

## CHARACTERISTICS OF REPRESENTATIVE PRODUCT

	TECHNOLOGY CHARACTERISTICS	OPERATIONAL PARAMETERS	POTENTIAL OPPORTUNITIES FOR IMPROVEMENT
<b>SKILLS REQUIRED</b>	Intended end user	Pediatric clinician, child	With weight bands clinicians can more easily prescribe FDC.
	Training required	Minutes	
	Time required per use	Minutes	
<b>ENVIRONMENT/ INFRASTRUCTURE</b>	Power required	None	
	Waste collection	None	
	Complementary technologies required	None	
	Temperature and storage	Store away from heat and light, 20°C-25°C	
	Maintenance	None	
<b>COST</b>	Device cost (approximate)	N/A	
	Cost/course (approximate)	<\$0.03/day	
<b>OTHER</b>	Portability	<10g	
	Regulatory	Full WHO Prequalification (PQ) is expected in 2016. Component drugs of FDC widely approved.	
	Efficacy	Same as standard treatment.	

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