

Supplementary file

Assumptions:

- 1- Epidemiological situation is the same between year 1, year 2 and year 3
- 2- 15 % increase of sample collected per year
- 3- Cost per cartridge concerning Xpert is stable between year 1 and year 3; while Cost per Test concerning TB-LAMP decrease between year 1 and year 2 and is stable between year 2 and year 3
- 4- Both algorithm are implemented in same settings

Table 6: Cost estimate for prisons using Algorithm 1 (Testing with Gene Xpert MTB/RIF) for three years

Algorithm 1: Testing with Gene Xpert MTB/RIF				
Items		Year 1	Year 2	Year 3
GeneXpert GX-IV (4-Module System) with Desktop and 2-years warranty extension *		17000	NA	NA
Shipment		1000	NA	NA
UPS		1000	NA	NA
Printer		200	NA	NA
Air-conditioners		200	NA	NA
1-year warranty extension – GX-IV (4-Module System) *		NA	NA	2898
Consumables		40311.21	46357.89	53311.58
	Cost per cartridge *	9.98	9.98	9.98
	Number of tests performed during mass screening campaign (15% increase in collected samples number per year)	3672	4222.8	4856.22
	Losses due to error/incorrect use (high estimate 10%)	367.2	422.28	485.62
	Total tests performed	4039.2	4645.08	5341.84

HR costs (per diem)		27880	27880	27880
	Technician (160 USD/prison×34 prisons)	5440	5440	5440
	Medical Doctor (160 USD/prison×34 prisons)	5440	5440	5440
	Nurses (160 USD/prison)	5440	5440	5440
	Prison staff (20 USD/prison×34 prisons)	680	680	680
	TB Regional Coordinator(160 USD/prison)	5440	5440	5440
	Driver (160 USD/prison×34 prisons)	5440	5440	5440
Total Cost		87591.21	74237.89	84089.58

*References of prices: Global Drug Facility (GDF). Diagnostics Catalog 2018. available on http://www.stoptb.org/assets/documents/gdf/Diagnostics_Catalog_2018_WEB.pdf. NA: not applicable

Table 7: Cost estimate for prisons using Algorithm 2 (Initial testing with TB-LAMP followed by testing with Xpert MTB/RIF) for three years

Algorithm 2: Initial testing with TB-LAMP followed by testing with Xpert MTB/RIF						
	Year 1		Year 2		Year 3	
	HumaLoopT with 1 year warranty upon purchase	GeneXpert GX-IV (4-Module System) with Desktop and 2-years warranty upon purchase	HumaLoopT	GeneXpert GX-IV (4-Module System) with Desktop and 2-years warranty upon purchase	HumaLoop T	GeneXpert GX-IV (4-Module System) with Desktop
Items						
Equipement *	2870	17000	NA	NA	NA	NA
Shipment	800	1000	NA	NA	NA	NA
UPS	470	1000	NA	NA	NA	NA

Printer	NA	200	NA	NA	NA	NA
Air-conditioners	NA	200	NA	NA	NA	NA
1-year warranty extension – GX-IV (4-Module System) *	NA	NA	NA	NA	NA	2898
Maintenance with warranty extension for TB-LAMP *	NA	NA	1892	NA	1892	NA
Consumables	34737.12	1350.29	27870.48	1552.98	32051.05	1785.93
Cost per cartridge or test*	8.6	9.98	6 **	9.98	6 **	9.98
Number of tests performed (estimate 15% increase in collected samples per year)	3672	NA	4222.8	NA	4856.22	NA
Number of tests performed with Xpert (3.315% of TB LAMP positivity rate)	NA	123	NA	141.46	NA	162.68
Losses due to error/incorrect use (high estimate 10%)	367.2	12.3	422.28	14.14	485.62	16.26
Total tests performed	4039.2	135.3	4645.08	155.61	5341.84	178.95

HR costs (per diem)	27880	27880	27880	27880		
Technician (160 USD/prison×34 prisons)	5440	5440	5440	5440		
Medical Doctor (160 USD/prison×34 prisons)	5440	5440	5440	5440		
Nurses (160 USD/prison)	5440	5440	5440	5440		
Prison staff (20 USD/prison×34 prisons)	680	680	680	680		
TB Regional Coordinator(160 USD/prison)	5440	5440	5440	5440		
Driver (160 USD/prison×34 prisons)	5440	5440	5440	5440		
Total Cost	66757.12	20750.29	55750.48	1552.98	59931.05	4683.93
Total Cost per Year	87507.41	57303.46	64614.99			

*References of prices: Global Drug Facility (GDF). Diagnostics Catalog 2018. available on http://www.stoptb.org/assets/documents/gdf/Diagnostics_Catalog_2018_WEB.pdf;

**References of prices available in the GDF diagnostics catalog. HumaLoop T
For the prices that are indicated in Euro on the website; Exchange rate: 1€ = 1.13 \$,
NA: not applicable

Table 8: Cost estimate for villages using Algorithm 1 (Testing with Gene Xpert MTB/RIF) for three years

Algorithm 1: Testing with Gene Xpert MTB/RIF				
		Year 1	Year 2	Year 3
Items				
GeneXpert GX-IV (4-Module System) with Desktop and 2-years warranty extension*		17000	NA	NA
Shipment		1000	NA	NA
UPS		1000	NA	NA
Printer		200	NA	NA
Air-conditioners		200	NA	NA
1-year warranty extension – GX-IV (4-Module System)*		NA	NA	2898
Consumables		4424.13	5087.75	5850.917
	Cost per cartridge*	9.98	9.98	9.98
	Number of tests performed during mass screening campaign (15% increase in collected samples number per year)	403	463.45	532.96
	Losses due to error/incorrect use (high estimate 10%)	40.3	46.34	53.29
	Total tests performed	443.3	509.79	586.26
HR costs (per diem)		2460	2460	2460
	Technician (160 USD/village×3 villages)	480	480	480
	Medical Doctor (160 USD/village×3 villages)	480	480	480
	Nurses (160 USD/village×3 villages)	480	480	480
	Community health workers (20 USD/village×3 village)	60	60	60
	TB Regional Coordinator(160 USD/village×3 village)	480	480	480

Driver (160 USD/village×3 villages)	480	480	480
Total Cost per year	26284.13	7547.75	11208.91
*References of prices: Global Drug Facility (GDF). Diagnostics Catalog 2018. available on http://www.stoptb.org/assets/documents/gdf/Diagnostics_Catalog_2018_WEB.pdf ; NA: not applicable			

Table 9: Cost estimate for villages using Algorithm 2 (Initial testing with TB-LAMP followed by testing with Xpert MTB/RIF) for three years

Algorithm 2: Initial testing with TB-LAMP followed by testing with Xpert MTB/RIF						
	Year 1		Year 2		Year 3	
Items	HumaLoopT with 1 year warranty upon purchase	GeneXpert GX-IV(4-Module System) with Desktop and 2-years warranty upon purchase	HumaLoopT	GeneXpert GX-IV (4-Module System with Desktop) and 2-years warranty upon purchase	HumaLoopT	GeneXpert GX-IV (4-Module System) with Desktop
Equipment*	2870	17000	NA	NA	NA	NA
Shipment	800	1000	NA	NA	NA	NA
UPS	470	1000	NA	NA	NA	NA
Printer	NA	200	NA	NA	NA	NA
Air-conditioners	NA	200	NA	NA	NA	NA
1-year warranty extension – GX-IV (4-Module System)*	NA	NA	NA	NA	NA	2898
Maintenance with warranty extension for TB-LAMP*	NA	NA	1892	NA	1892	NA

Consumables	3812.38	131.736	3058.77	151.61	3517.58	174.35733
Cost per cartridge or test*	8.6	9.98	6**	9.98	6**	9.98
Number of performed (estimated 15% increase in collected samples per year)	403	NA	463.45	NA	532.96	NA
Number of tests performed with Xpert (2.98% of TB LAMP positivity rate)	NA	12	NA	13.81	NA	15.88
Losses due to error/incorrect use (high estimate 10%)	40.3	1.2	46.34	1.38	53.29	1.58
Total tests performed	443.3	13.2	509.79	15.19	586.26	17.47
HR costs (per diem)	2460		2460		2460	
Technician (160 USD/village× 3 villages)	480		480		480	
Medical Doctor (160)	480		480		480	

USD/village×3 villages						
Nurses (160 USD/village×3 villages)	480		480		480	
Community health workers (20 USD/ village×3 village)	60		60		60	
TB Regional Coordinator(160 USD/ village×3 village)	480		480		480	
Driver (160 USD/village×3 villages)	480		480		480	
Total Cost	10412.38	19531.73	5518.77	151.61	5977.58	3072.35
Total Cost per Year	29944.11		5670.38		9049.94	

*References of prices: *Global Drug Facility (GDF). Diagnostics Catalog 2018. available on http://www.stoptb.org/assets/documents/gdf/Diagnostics_Catalog_2018_WEB.pdf;*

**References of prices available in the GDF diagnostics catalog. HumaLoop T
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