

MDR-TB Treatment Outcomes Over the Past 10 years in Port-Au- Prince, Haiti

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Haiti

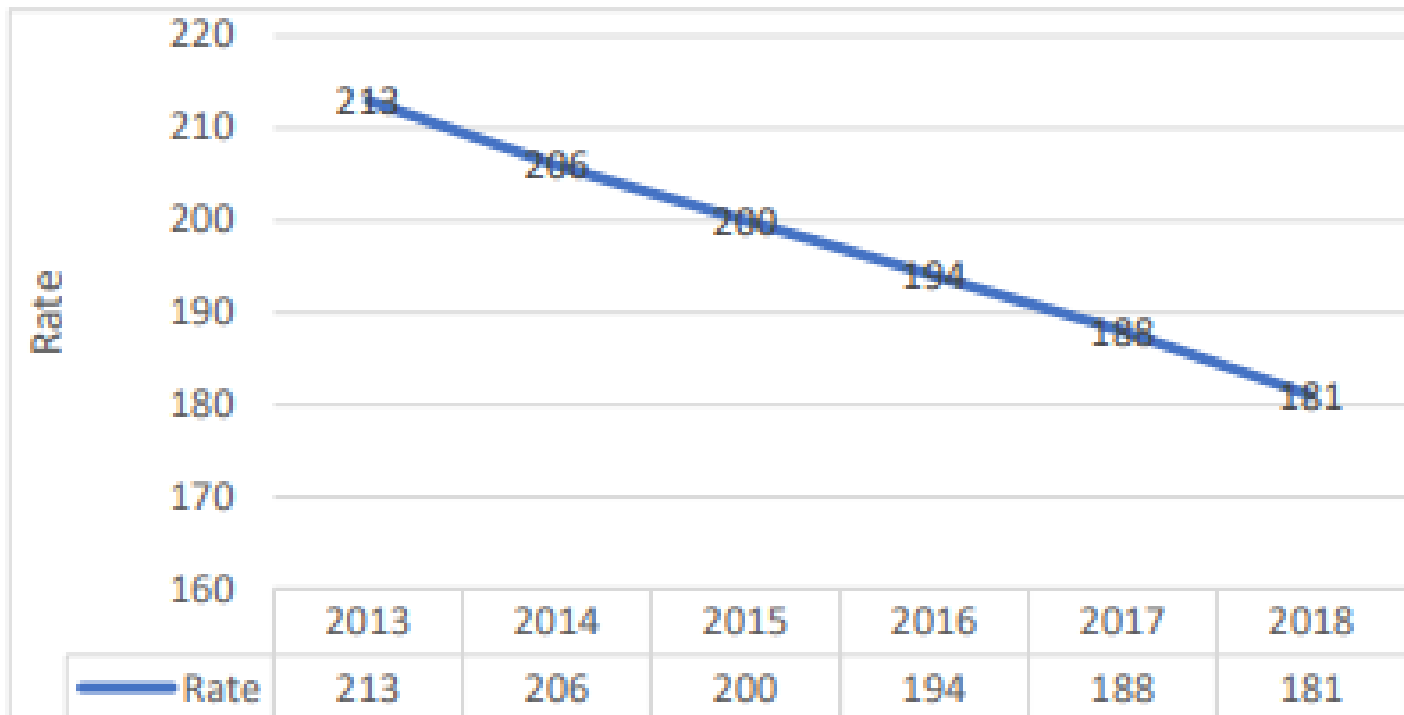


- **Area:** 10,710 square miles
- **Capital:** Port-au-Prince
- **GDP:** US\$ 9.5 Billion (2018,IMF)
- **Population:** 11,123,178 inhabitants (2,618,894 living in the metropolitan area of Port-au-Prince)
- The metropolitan area of Port-au-Prince is the main catchment area of Centres GHESKIO

Haiti's TB challenges

- Political instability : 22 governments since 1986
 - Frequent social unrest
- Poverty: poorest country in the Americas
 - GNP unchanged in last 30 years with doubling of population
 - Malnutrition
 - Overcrowding with high TB rate in urban slums
- Natural disasters : among 5 most fragile countries in the world
 - 2010 earthquake: 5.6 \$US billion in losses
 - Worst in over 1 century:
 - over 1.5 million people under tents for 3 to more years
 - 2010 cholera epidemic: worst in over 1 century
 - 2016: Hurricane Matthews ravaged the South: \$US 4.0 billion losses

Annual incidence of Tuberculosis. Rate per 100,000 inhabitants, in Haiti (2013-2018)



Source: PNL

Number of TB Cases according to Classification. Haiti, 2018

Classification	Cases
Pulmonary TB +	8 743
Pulmonary TB (-)	2 594
Total Pulmonary	11 337
Extra pulmonary	1 311
Total new TB cases	12 648
Relapses	735
Total Incident cases	13 383

Source: PNLT

TB/HIV Coinfection in Haiti

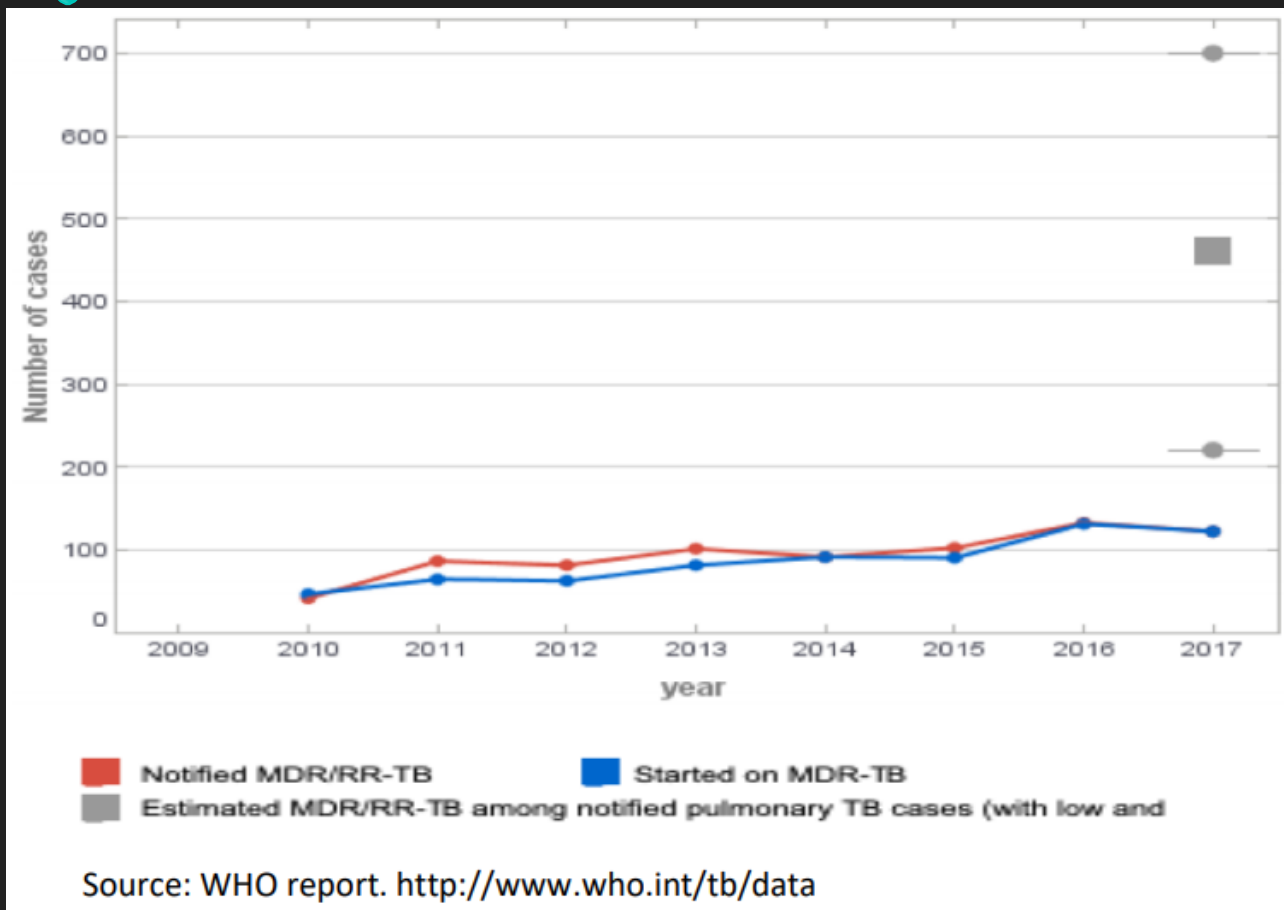
- HIV/AIDS prevalence in Adults: 1.9 % (2017 est.)
- ~ 16 % of TB patients have HIV

Number and percentage of TB cases coinfecting with HIV among tested patients. Haiti, 2011 – 2018

Year	Number of TB cases tested with HIV	Number of TB cases with HIV +	% of coinfecting among tested patients
2011	11 213	2 320	20.69%
2012	13 218	2 705	20.46%
2013	14 668	2 857	19.48%
2014	13 984	2 588	18.51%
2015	14 817	2 426	16.37%
2016	14 376	2 231	15.50%
2017	14 679	2 253	15.35%
2018	12 672	1 960	15.50%

Source: PNL

Diagnosis, notification and treatment of MDRTB and RR-TB in Haiti (2009-2017)



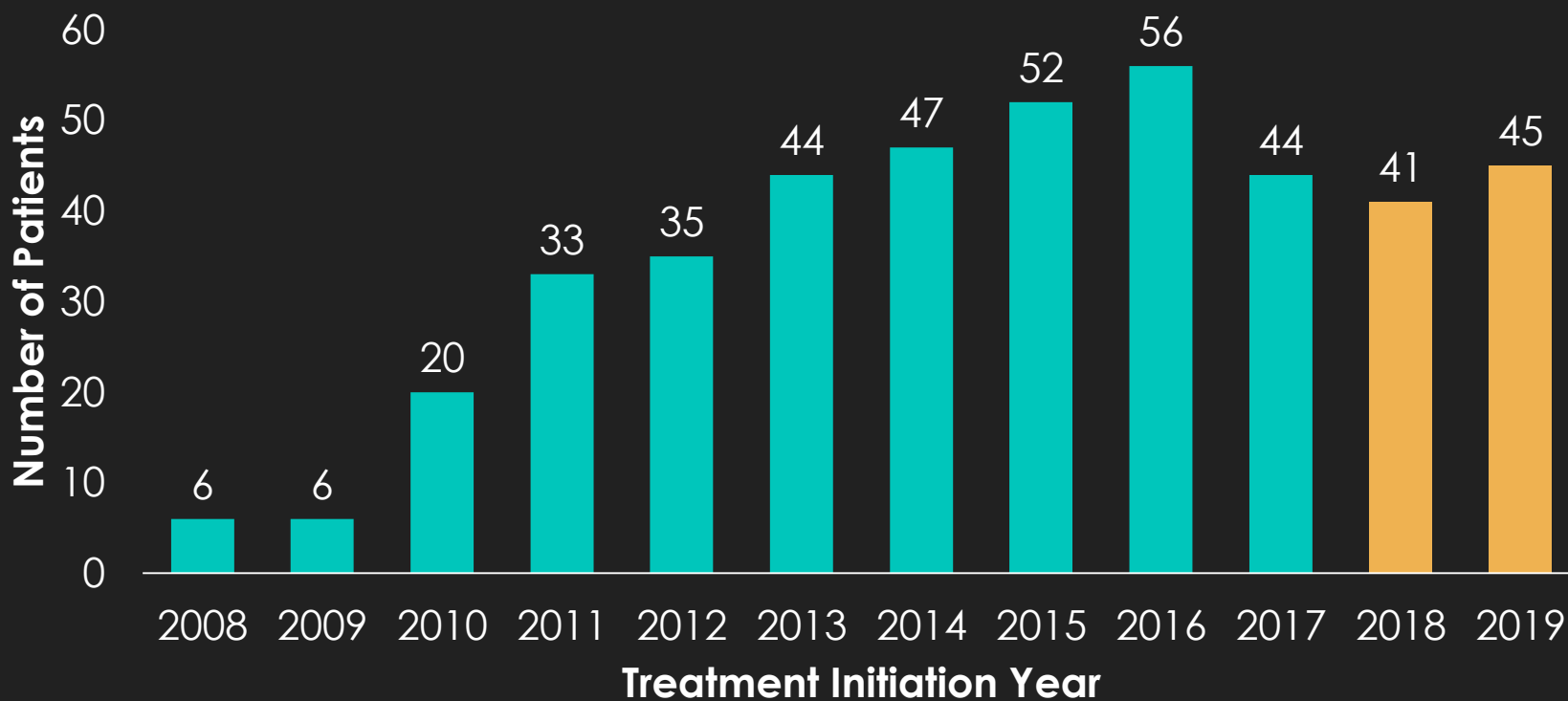
GHESKIO's Mission

- Founded in 1982, GHESKIO is the first infectious disease center in the developing world dedicated to the fight against HIV/AIDS through research, patient care and training
- GHESKIO provides integrated HIV/TB care and services including reproductive health and STI management
- GHESKIO is the largest HIV/AIDS treatment center in the Americas
- GHESKIO is an international site of the AIDS Clinical Trials Group, and has 35 years of continuous NIH funding

GHESKIO's Mission

- GHESKIO is one of the highest volume TB care centers in the Americas, enrolling approximately 2,500 new patients on TB treatment each year for the past 5 years.
- GHESKIO is also one of the two WHO-approved sites for the treatment of MDR-TB in Haiti (the other is Partners In Health)

Annual Enrollment for Adults with MDR-TB at GHEKIO from 2008 to December 2019 (n=429)



Patients have not completed treatment course

Structure of GHESKIO'S MDR-TB Treatment Program

- The treatment has 2 phases for a total duration of 20 months:
 - Hospitalization
 - Ambulatory

GHESKIO'S MDR-TB Hospital



- The hospitalization phase: About 4 months
- At Ludwig Pavilion: 33-bed hospital

Outpatient Treatment



- Ambulatory phase, 16 months
 - Family participation
 - Community DOT (GPS, smartphones equipped with a camera, motorized mobile teams to document the adherence to MDR-TB regimens twice daily)

GHESKIO'S MDR-TB program



GHESKIO Community MDRTB DOT Mobile Team

Provision of Social Support



- **Economic:** Transportation subsidies, phone cards, nutritional supplementation
- **Social:** counseling, family meetings
- **Additional support:** provision of a monetary prize and diploma upon completion of treatment

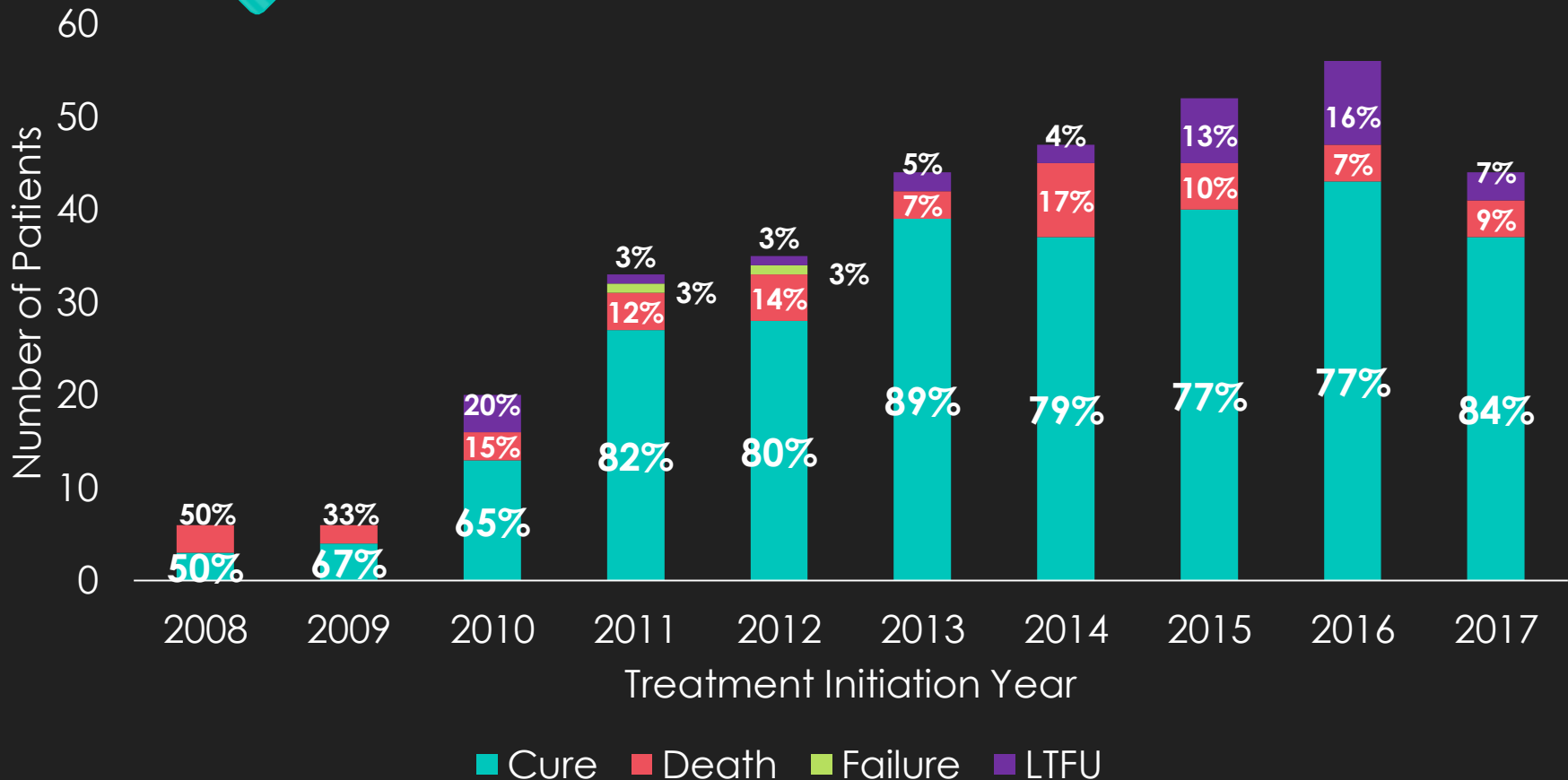
Changes in Treatment over Time

- **2008-2019:** Injectable-containing regimen for 24 months
- **2019-Present:** All oral regimen of BDQ, LFX, LZD, CFZ, PZA for 20 months
- *Operational research study of a 9-month all-oral short-course regimen was started in Sept 2018, but on hold due to lack of funding*

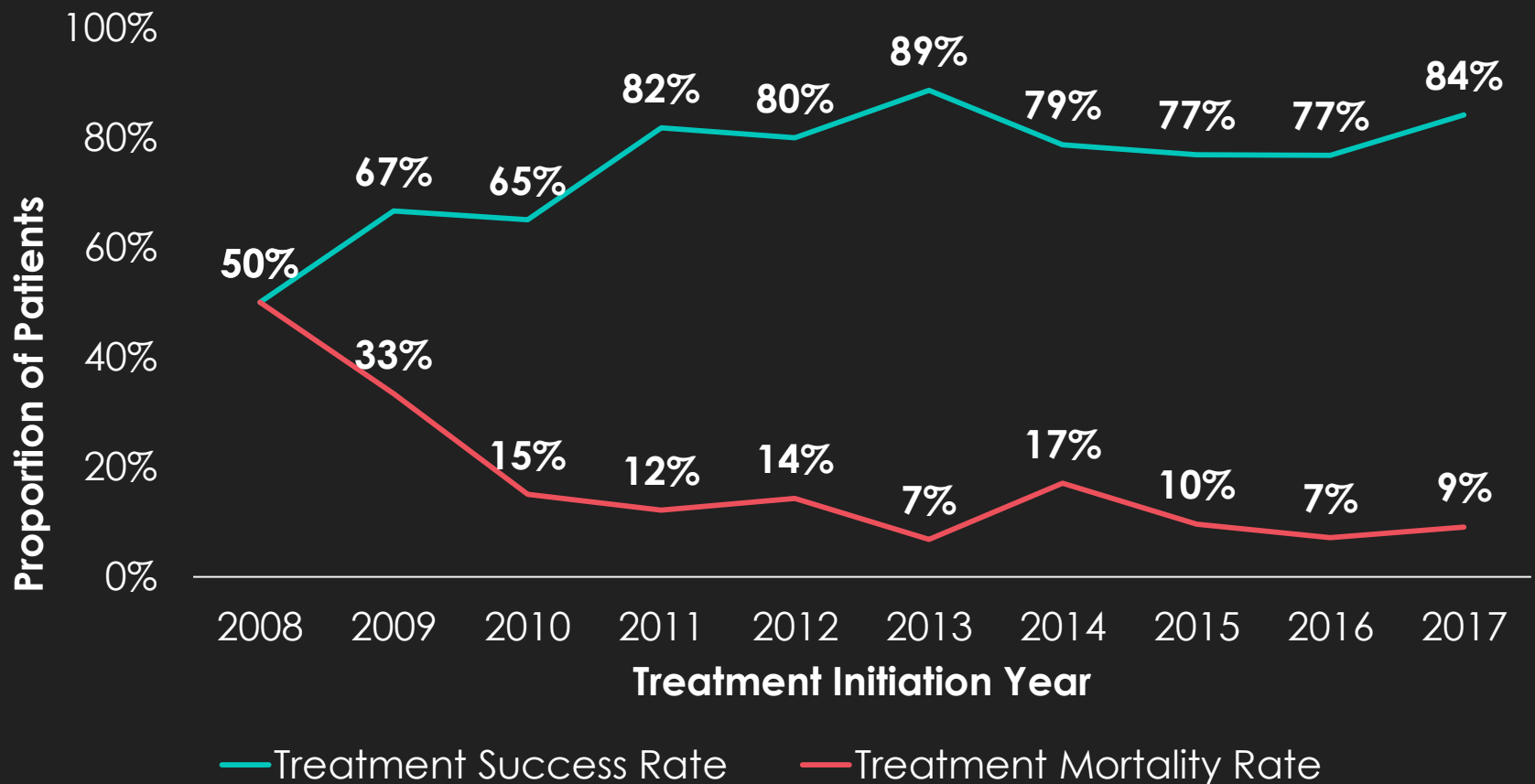
Characteristics of GHESKIO MDR-TB Cases (2008-2017)

Demographics	HIV Negative (N = 264)	HIV Positive (N = 79)	Total Patients (N = 343)	p
Age, median [Q1, Q3]	29 [24, 40]	33 [26, 42]	30 [24, 40]	0.138
Male	146 (55.3%)	34 (43.0%)	180 (52.5%)	0.056
Diabetes	6 (2.3%)	0 (0.0%)	6 (1.7%)	0.388
Past TB treatment				0.622
No	24 (9.1%)	9 (11.4%)	33 (9.6%)	
Yes	238 (90.2%)	70 (88.6%)	308 (89.8%)	
Unknown	2 (0.8%)	0 (0.0%)	2 (0.6%)	
Past TB treatment type				-
FLD	238 (90.2%)	70 (88.6%)	308 (89.8%)	
Missing	26 (9.8%)	9 (11.4%)	35 (10.2%)	
TB Site				-
Both	1 (0.4%)	0 (0.0%)	1 (0.3%)	
Pulm	263 (99.6%)	79 (100.0%)	342 (99.7%)	
Xpulm	0 (0.0%)	0 (0.0%)	0 (0.0%)	

MDRTB Treatment Outcomes (2008-2017)



MDRTB treatment outcomes (2008-2017)

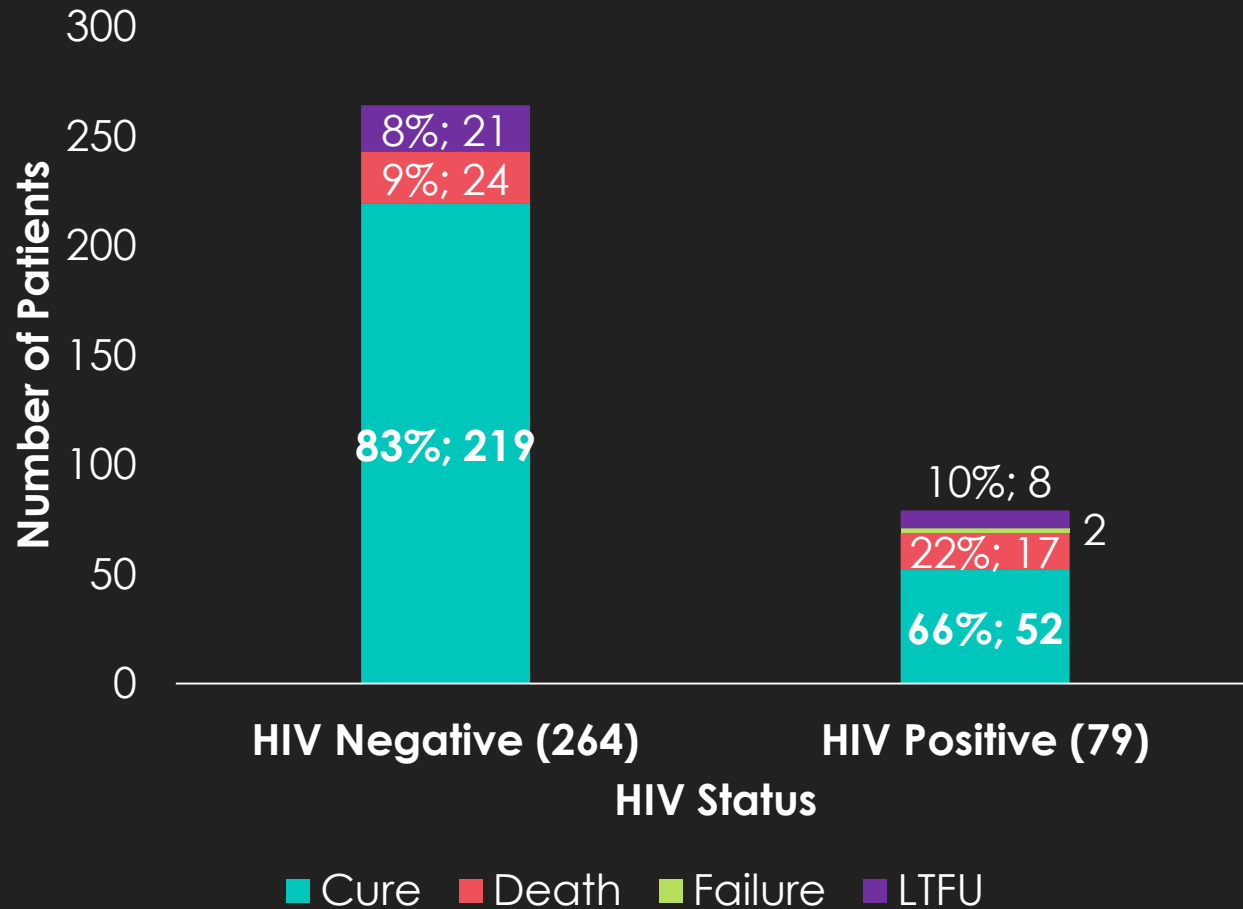


MDRTB treatment outcomes (2008-2017)

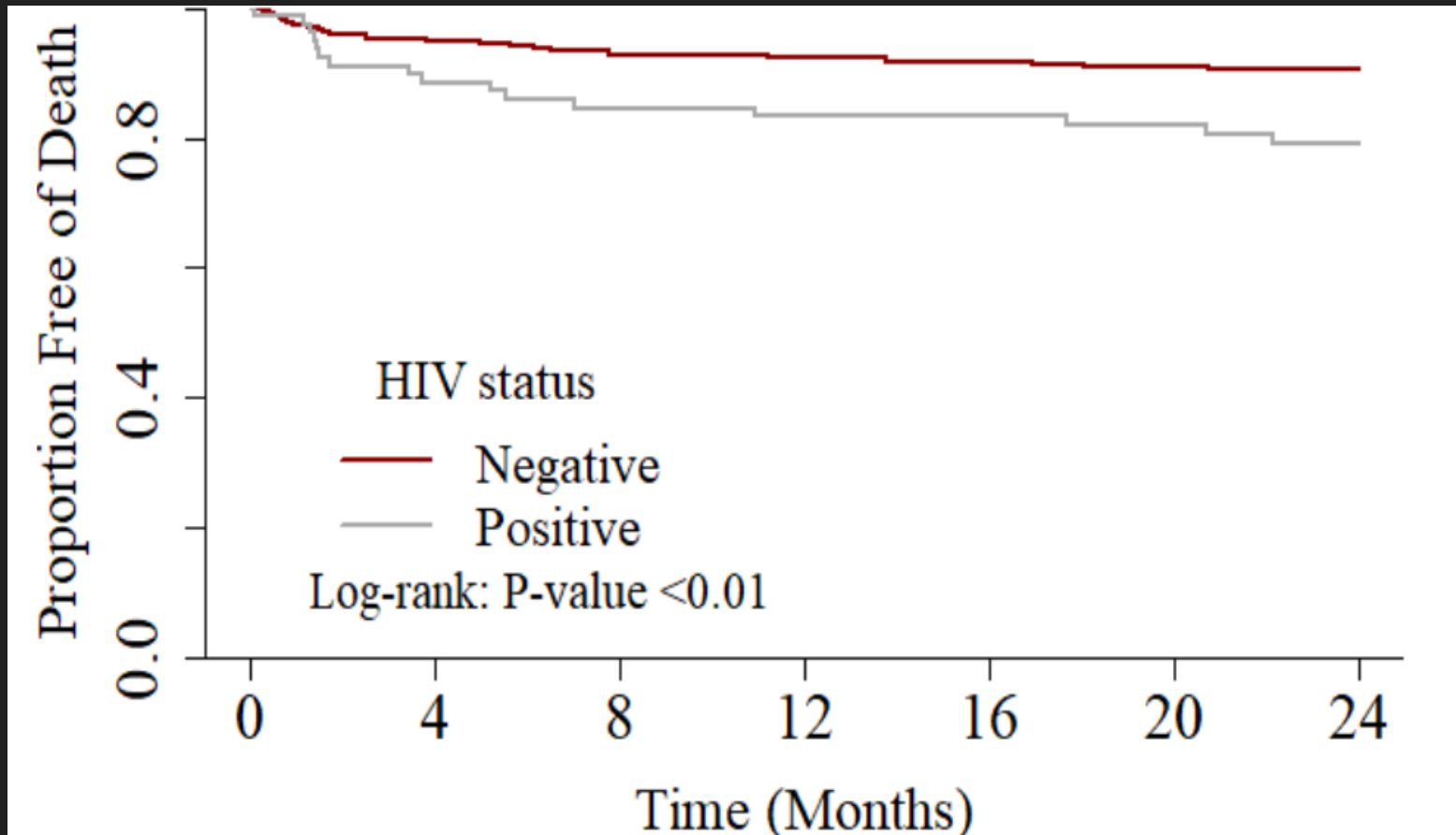
MDRTB treatment outcomes by HIV status

Outcome	HIV Negative (N = 264)	HIV Positive (N = 79)	Total (N = 343)
Cure	219 (83%)	52 (66%)	271 (79%)
Death	24 (9%)	17 (22%)	41 (12%)
Failure	0 (0%)	2 (2%)	2 (1%)
LTFU	21 (8%)	8 (10%)	29 (8%)

MDRTB Treatment Outcomes (2008-2017) by HIV Status



Survival Analysis by HIV Status



Multivariate Logistic Regression of MDR-TB Cure

	OR	95% CI	p
HIV	0.38	(0.20, 0.73)	0.003
Pre-XDR Resistance	0.28	(0.07, 1.21)	0.072
Male	0.91	(0.50, 1.66)	0.764
Ethionamide Resistance	0.68	(0.33, 1.49)	0.315
Year (pre-2013 vs. post-2013)	1.16	(0.60, 2.17)	0.654

- The outcome is cure. An odds ratio > 1 indicates increased odds of achieving cure.
- Covariates were selected if their p-value in the univariate model were < 0.3 and the OR was < 0.8 or > 1.2 .

Summary

- GHESKIO has been able to provide successful treatment for MDR-TB in spite of extraordinary economic and political challenges in Haiti
- We attribute the low rate of LTFU to:
 - Staff are trained to treat patients with dignity and respect
 - DOT is provided with careful supervision
 - Social and economic support are provided, included treatment completion prize and diploma
- Persons living with HIV have higher mortality rates – we anticipate that survival will improve with newer, more effective regimens now in use

Thank you

