

Quick Start Guide

Running the model with User Input Values

The Flexible Diagnostics (FlexDx) TB Model is a flexible, simple, transmission modeling tool that allows users without modeling expertise to generate evidence to aid decision-making for implementation of tuberculosis (TB) diagnostics under local conditions. Using a simple web-based interface, FlexDx incorporates local estimates of TB incidence, MDR-TB, HIV, and costs into a combined decision analysis-transmission modeling framework to generate five-year projections of epidemiological impact and cost-effectiveness of nine diagnostic strategies in reducing TB transmission and mortality.

Users can run the FlexDx TB Model using their own values for key epidemiological parameters and local unit costs of TB diagnosis and treatment. Running the model with User Inputs will return projected results for key epidemiologic indicators. Users can run the model for a Single (diagnostic) Strategy or for All Strategies. Users can also run the FlexDx TB Model with pre-set values at the country level, taken from WHO estimates and other sources. The Country Pre-set Values provide some additional functionality (including exploration of uncertainty) than the model with User Input Values. See the *Quick Start Guide for Running the model with Country Pre-set Values* for more information.

Using the FlexDx TB Web Interface

1. Select a Single Diagnostic Strategy or All Strategies

2. Enter Epidemiological Scenario and Costs data

3. Click to run the model

Click here to define your own diagnostic strategy

Click here for Help Files or more information about the model's creators

Scroll to view the diagnostic strategy descriptions

***Tip - If you know the Epidemiologic Scenario parameter estimates for your setting but do not know the Costs and want to use pre-loaded values, you can:**

- 1) Select your country from the drop down list
- 2) Select diagnostic strategy or all strategies
- 3) Enter epidemiologic data for your setting
- 4) Keep pre-loaded values of costs as listed
- 4) Click 'Run with user inputs'

The screenshot shows the FlexDx web interface. At the top, there's a header with the logo and navigation links. Below that, the 'Model Inputs' section is visible, including a country selector, a list of diagnostic strategies, and input fields for epidemiological data and costs. A 'Run Model With User Inputs' button is highlighted. On the right, a 'Brief Description of Diagnostic Strategies' panel is shown, listing various strategies like 'Baseline(Smear)', 'Xpert for smear-positive', etc. Red and blue callouts with arrows point to specific elements, and a tip box provides additional guidance.

Single Strategy Output

The results using User Input values are displayed below for all strategies. Note that this is the output returned when the model is run for a single strategy as well. The estimates displayed reflect projections that are expected in Year 5 of the strategy's implementation.

Click to return to
model inputs page

Back to Inputs

Model options:

TB Incidence: 250 per 100,000 Adult HIV prevalence: 0.83% Percent of new TB that is MDR: 3.7%

- Treatment of one patient with first-line drugs: \$500
- Treatment of one patient with retreatment ("category 2") regimen: \$1000
- Treatment of one patient with second-line (MDR) drugs: \$5000
- One outpatient visit (e.g., for TB diagnosis): \$10
- Full sputum smear evaluation (e.g., collection & evaluation of 2 smears): \$2
- Single Xpert MTB/RIF test: \$15
- Single Xpert, including extra costs to make results available on same day: \$30

Epidemiological Scenario and Cost parameter values used to generate the model's results are displayed here.

*If the values for any of the parameters are not appropriate for your setting, users can click 'Back to Inputs' to return to the model inputs page and adjust the values as necessary.

Click to view
the different
single
strategy
results Tabs

1. Xpert for smear-positive

2. Xpert for HIV+

3. Xpert for previously treated

4. Xpert for sm-neg HIV+ or prev tx

5. Xpert for all HIV+ or prev tx

6. Xpert for smear-negative

7. Xpert for all

8. Xpert for all, same-day

Interactive Incidence/Cost

Interactive MDR/Cost

Summary Data

Click to view all
strategies and
summary results
Tabs

Baseline (Smear)

Description	Value
TB Incidence	
New:	218.4 per 100,000
Retreatment:	31.6 per 100,000
Total:	250 per 100,000
	Baseline Reference
Drug-Resistance	
INH New:	13.3%
INH Retreatment:	18.6%
MDR New:	3.7%
MDR Retreatment:	15.45%
Total MDR:	12.96 per 100,000
	Baseline Reference
Additional Outputs/Indicators	
TB/HIV:	13.2%
HIV Prevalence:	0.8%
TB Duration:	1.21 years
TB Mortality:	34.6 per 100,000
	Baseline Reference
Costs	
In Year 1:	\$119001
	Baseline Reference
In Year 5:	\$119001
	Baseline Reference

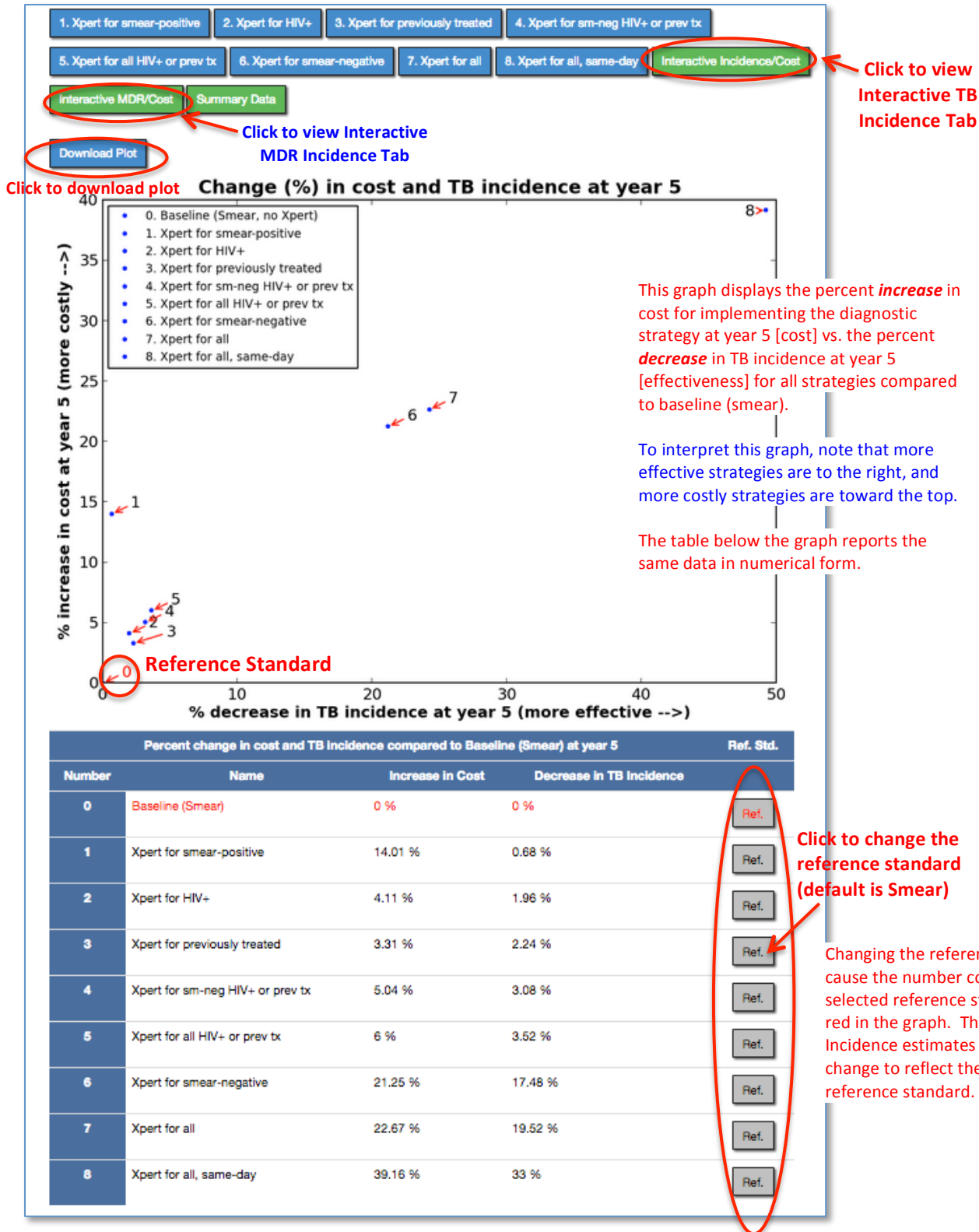
1. Xpert for smear-positive

Description	Value
TB Incidence	
New:	217.6 per 100,000
Retreatment:	30.6 per 100,000
Total:	248.3 per 100,000
	0.7% decrease
Drug-Resistance	
INH New:	13.4%
INH Retreatment:	19.1%
MDR New:	3.3%
MDR Retreatment:	12.92%
Total MDR:	11.14 per 100,000
	14% decrease
Additional Outputs/Indicators	
TB/HIV:	13.2%
HIV Prevalence:	0.8%
TB Duration:	1.21 years
TB Mortality:	34.4 per 100,000
	0.6% decrease
Costs	
In Year 1:	\$137797
	15.8% increase
In Year 5:	\$135674
	14% increase

**See the full FlexDx TB Model User's Manual for a more detailed description of the output.*

Interactive Incidence/Cost and MDR/Cost Tabs

The FlexDx TB Model will generate an interactive graph and summary table Tab for TB Incidence and MDR Incidence that allow the user to change the reference standard. The results for overall TB Incidence are shown below, but the corresponding results for MDR Incidence can be seen by clicking the Interactive MDR/Cost Tab.



Summary Tab

The Summary Data Tab provides the user with a summary of the FlexDx TB Model results for TB and MDR Incidence, Mortality, Year 1 Cost, and Year 5 Cost projections.

<div> 1. Xpert for smear-positive 2. Xpert for HIV+ 3. Xpert for previously treated 4. Xpert for sm-neg HIV+ or prev tx 5. Xpert for all HIV+ or prev tx 6. Xpert for smear-negative 7. Xpert for all 8. Xpert for all, same-day Interactive Incidence/Cost Interactive MDR/Cost Summary Data </div>					
Name	Chg in total Inc.	Chg in MDR Inc.	Chg in TB mort.	Cost Chg Yr1	Cost Chg Yr5
1 Xpert for smear-positive	0.7%	14%	0.6%	15.8%	14%
2 Xpert for HIV+	2%	2%	10.1%	6.9%	4.1%
3 Xpert for previously treated	2.2%	6.4%	5.2%	7.7%	3.3%
4 Xpert for sm-neg HIV+ or prev tx	3.1%	5.6%	10.4%	10.6%	5%
5 Xpert for all HIV+ or prev tx	3.5%	7.7%	11.6%	12.1%	6%
6 Xpert for smear-negative	17.5%	17.6%	24.6%	48.9%	21.2%
7 Xpert for all	19.5%	30.1%	27.5%	56.7%	22.7%
8 Xpert for all, same-day	33%	39.6%	41.3%	90.5%	39.2%
All values indicate percentage change from baseline scenario (smear)					
Green values represent reductions, red values represent increases					

[Click to view Summary Data Tab](#)

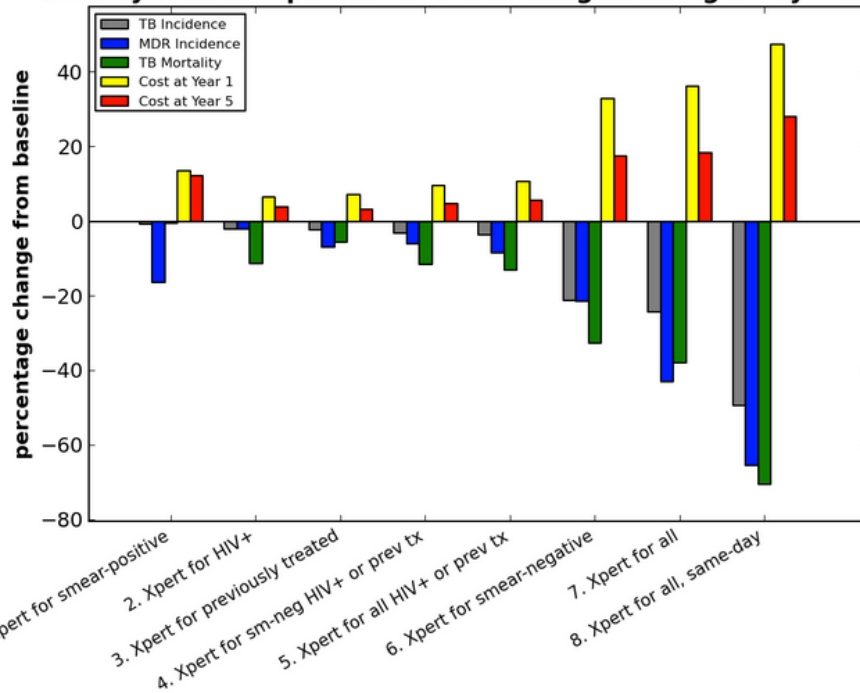
This table displays the projected changes in TB Incidence, MDR Incidence, TB Mortality, Year 1 Costs, and Year 5 Costs as a percent decrease (**green**) or increase (**red**) for All Strategies compared to the Baseline (smear) diagnostic scenario.

To extract the data in this table, users may take a screen shot of the table or manually extract and copy the data into a program of their choice. The next version of FlexDx will offer the option to download the table.

[Download Plot](#)

[Click to download plot](#)

Side-by-Side Comparison of the Strategies Using 5 Key Metrics



This graph provides a visual representation of the data in the summary table above, displaying the projected changes in TB Incidence, MDR Incidence, TB Mortality, Year 1 Costs, and Year 5 Costs as a percent decrease or increase for All Strategies compared to the Baseline (smear) diagnostic scenario.

Limitations of the FlexDx TB Model

As with any modeling analysis, the FlexDx TB Model and the user generated results from the model have important limitations. Thus, while FlexDx can be a very useful tool to provide access to “first-pass” estimates in epidemiological settings (e.g., sub-district level data) that will never be captured by more detailed and closely-calibrated TB transmission models, it does not eliminate the necessity for more detailed models.

For more information or to access the help files for the FlexDx Model, users can click on the ‘About’ and ‘Help’ buttons on the model input page. See the full ***FlexDx TB Model User’s Manual*** for more details on using the model.