# Demolandia - Programs

Demolandia currently has a **passive case finding** program, and conducts **contact tracing** with contacts of those with active TB.

All DS and MDR treatments are currently provided with (primarily) **ambulatory** treatment (DOT). XDR cases are treated primarily through **hospitalization**. For those currently treated, the treatment outcomes are consistent with the international values reported by the WHO.

ART coverage in the country is zero currently, coupled with the extremely low diagnosis and treatment rates of TB.

Demolandia is considering the introduction of a more comprehensive ART program, treatment of PLHIV who are contacts of those with active TB through **preventive treatment** (prophylaxis), and new drugs for treatment of XDR cases.

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| --- | --- | --- | --- | --- |
| **Program** | **Spending** | **Unit cost** | **Coverage (current)** | **Capacity constraint** |
| BCG | ? | $5 | Number of vaccinations given | Number of births |
| Preventive treatment | 0 | \* | 0 |  |
| ART | 0 | $300 | 0 |  |
| PCF | $900,000 | ? | 90% of diagnoses are currently through PCF (=780 in 2017) | 780 (already at maximum capacity) |
| ACF (contact tracing) | $300,000 | ? | 10% of diagnoses are currently through ACF (=87 in 2017) |  |
| Ambulatory DS | $759,000 | $1000 | All of current treatment |  |
| Ambulatory MDR | $620,000 | $5000 | All of current treatment |  |
| Hospitalized XDR | $50,000 | $10000 | All of current treatment |  |
| XDR new drugs | 0 | $15000 | 0 |  |

The target population for preventive treatment is only **PLHIV** who have recently been exposed to infection (those with **early latent TB**). It costs $1000 per completed course, but it is estimated that only half of the people who would receive preventive therapy would actually have latent TB.

Calculate:

1. **Spending** for BCG = unit cost \* coverage
2. **Unit cost** for Preventive treatment (based on cost per person covered from within the target population & compartment(s))
3. **Coverage** for PCF and ACF based on the 87% diagnosis rate of people with TB who are screened and tested under all modalities, and the most recent number of actual diagnoses for each program respectively.
4. **Unit cost** for PCF and ACF = spending / coverage
5. **Coverage** for treatment modalities

## Scenarios

Explore the impact of the three new programs – which is more cost effective at reducing new infections?

## Optimization

The country has realized the TB response is inadequate – what would the optimized allocation be with the current budget? With 2x the current budget? 10x the current budget?

Run with some different objective functions and constraints.

## Advanced

Modify the program effects, or create a new program book with different optional programs in addition to the current ones, such as an incentivized DS/MDR modality that might have a lower LTFU rate due to higher adherence.