

# The price of change – Replacing Stavudine with Tenofovir in first-line ART in scaling-up settings

XVII International AIDS Conference  
Mexico City, 7th August 2008



**Jari Kivela**  
Health Economist  
+31 20 850 8497  
[jari.kivela@qalys.eu](mailto:jari.kivela@qalys.eu)

# Background

- ▶ WHO recommendation to replace d4T
- ▶ Scaling-up
  
- ▶ Problem: How much will it cost?
- ▶ Tool: Health economic model

# Objectives

Develop a model to:

- ▶ Support decision making
- ▶ Demonstrate budget impacts
- ▶ Compare timing of introduction
- ▶ Forecast ART budget 2008 - 2014

# Tenofovir vs. Stavudine

## Tenofovir (TDF)

- ▶ WHO recommendation
- ▶ Better toxicity profile
- ▶ Once a day dosing
- ▶ TDF \$128 PPY

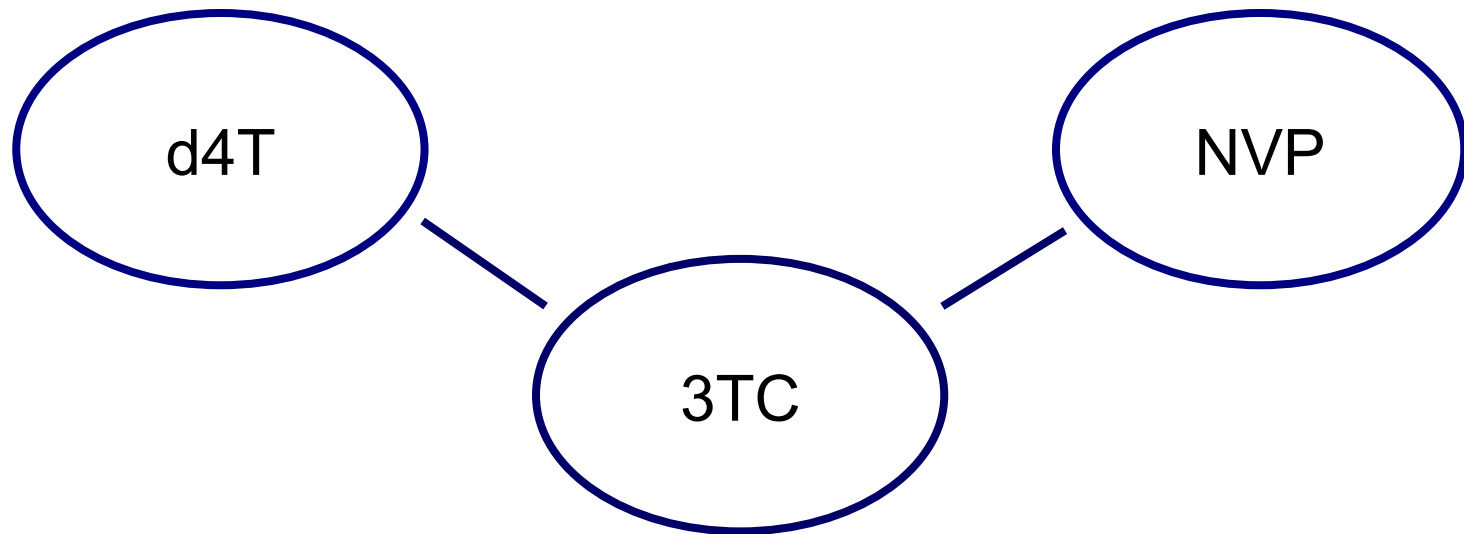


## Stavudine (d4T)

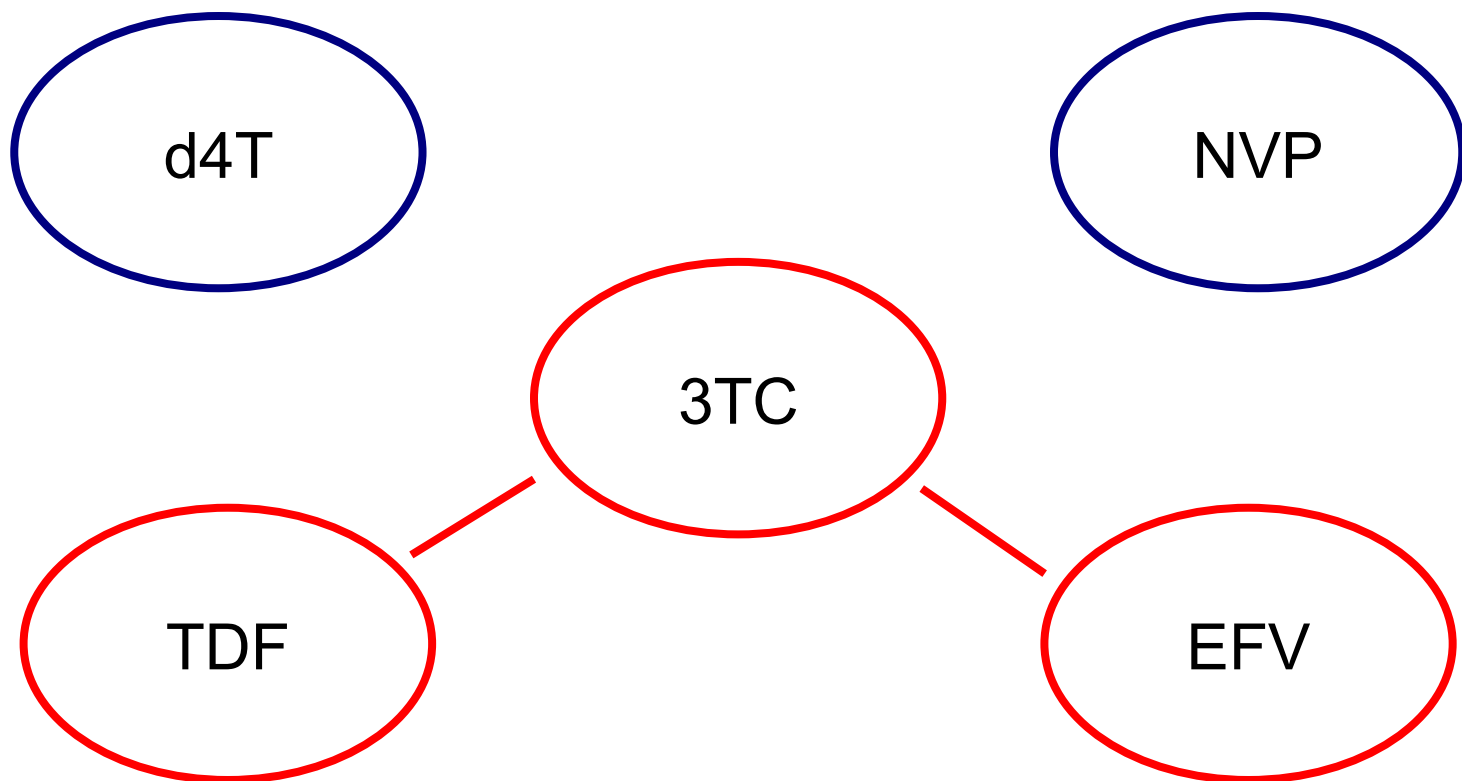
- ▶ d4T \$19 PPY
- ▶ Significant toxicities
- ▶ Fixed dose combination:  
d4T / 3TC / NVP  
30mg / 150mg / 200mg



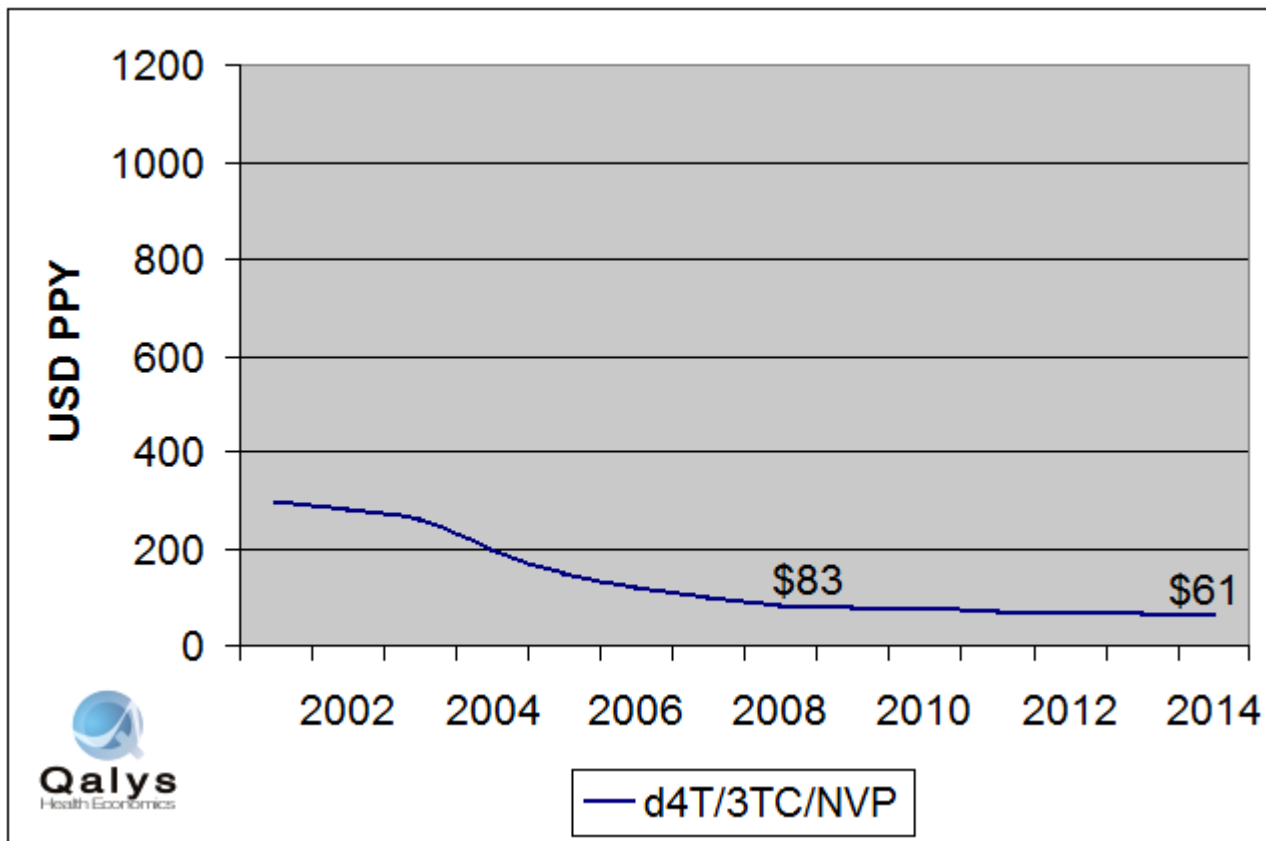
# Current first-line regimen



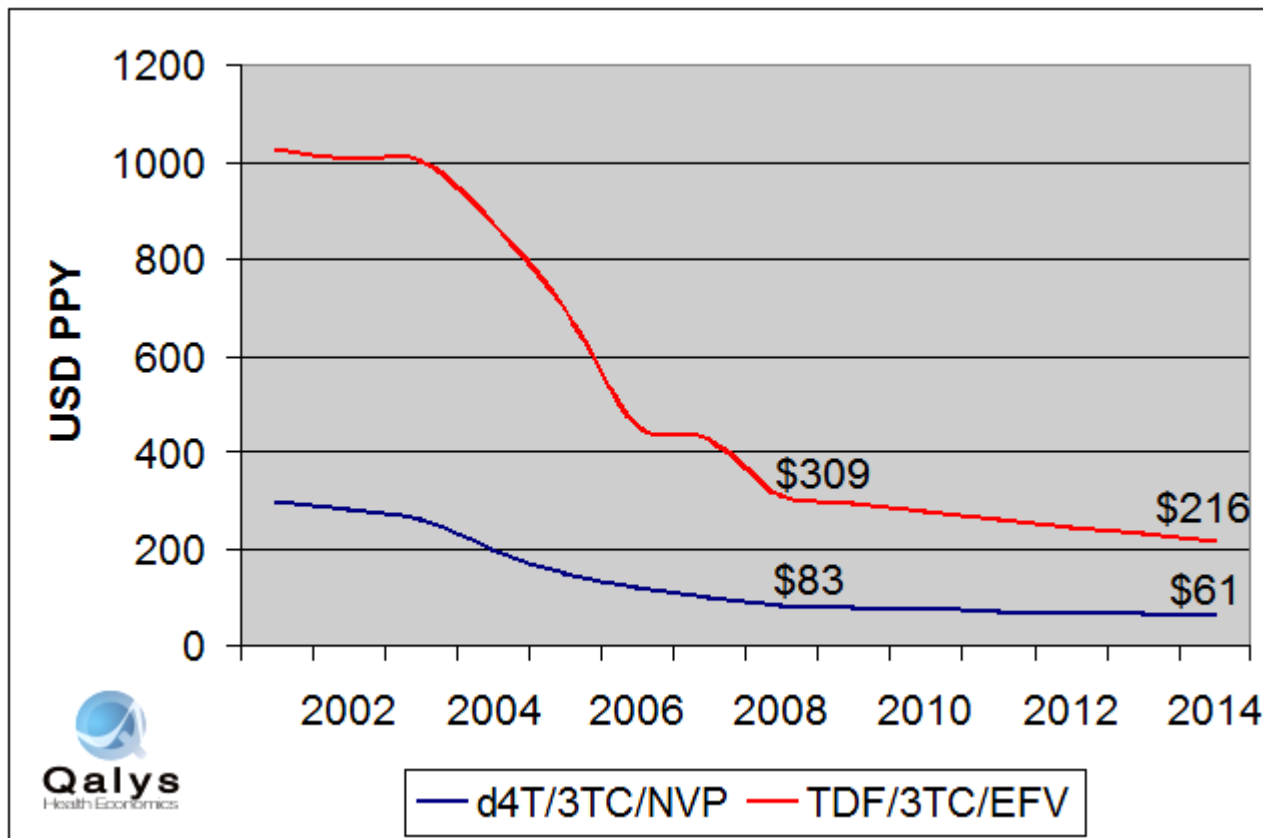
# New improved first-line regimen



# Price of d4T/3TC/NVP

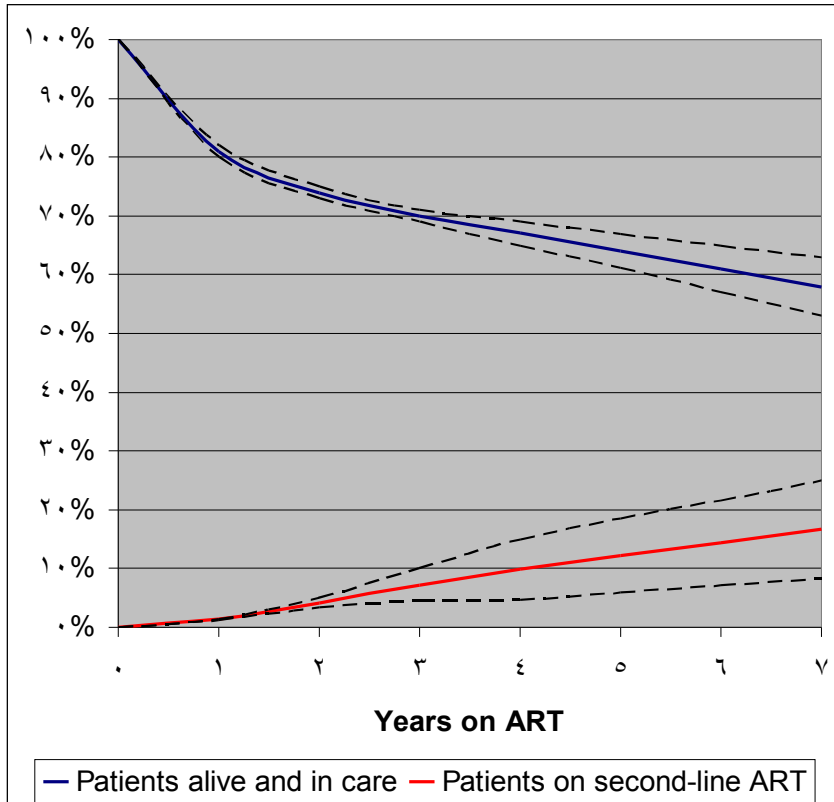


# Price of TDF/3TC/EFV





# ART survival and 2nd-line switch rate



- ▶ Global Cohort MSF  
57.000 ART patients
- ▶ Extrapolated after 48 months
- ▶ ART survival 9.7 years
- ▶ 2nd-line switching rate

# Epworth Program

Epworth, Harare township

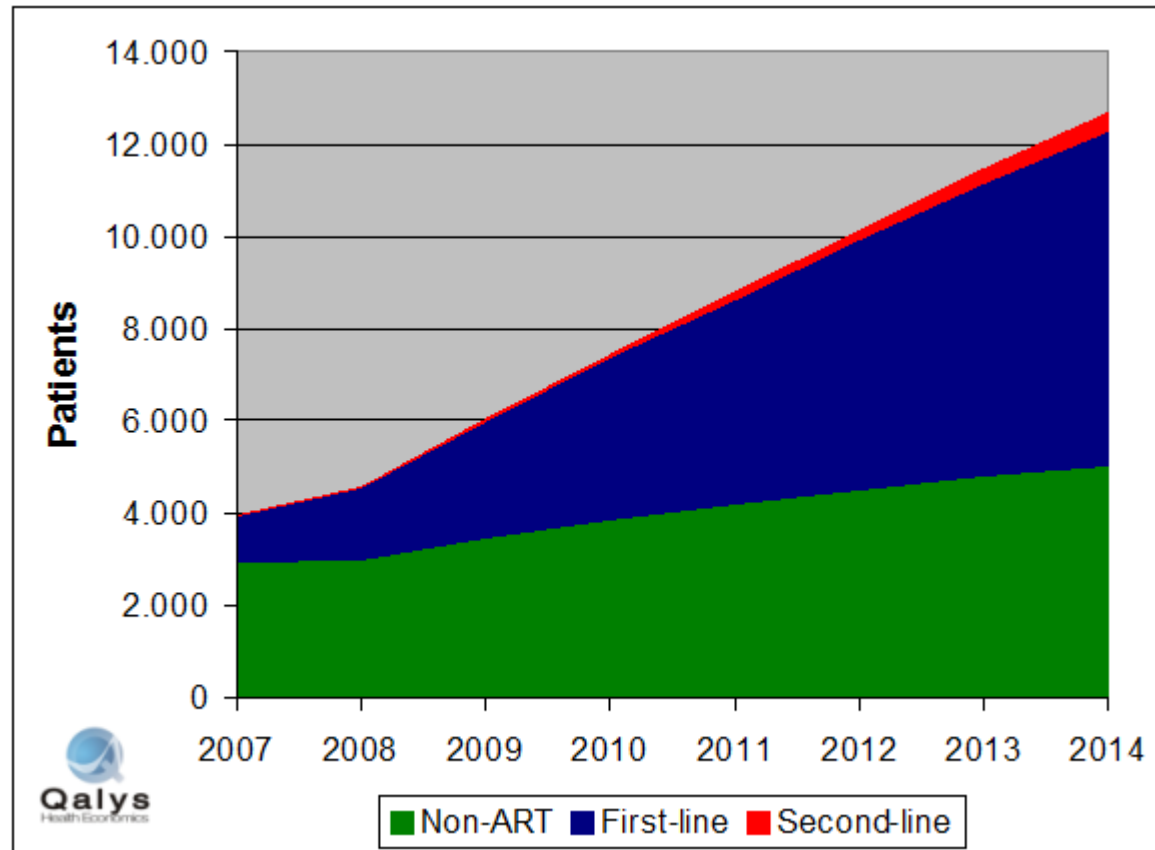
- ▶ Population 400.000
- ▶ 20% infected with HIV

MSF program

- ▶ 6.000 HIV+ patients
- ▶ 1.400 on ART
- ▶ First ARTs April 2007
- ▶ 150 new patients / month



# 150 new ART patients / month



# Methods

- ▶ **Patient volume**

Nr of patients, speed of scaling-up

- ▶ **Medical data**

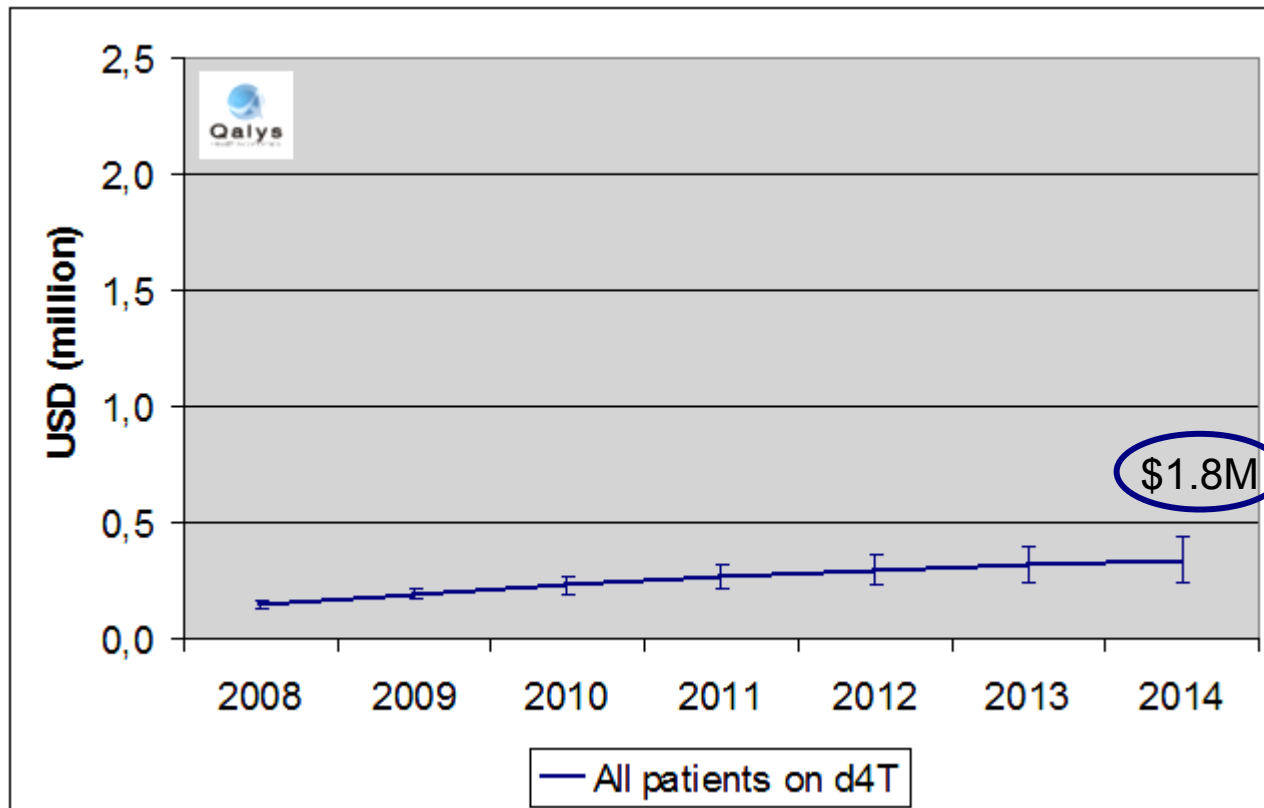
ART regimens, ART survival, rate of switch to 2nd-line, CD4 baselines

- ▶ **Financial information**

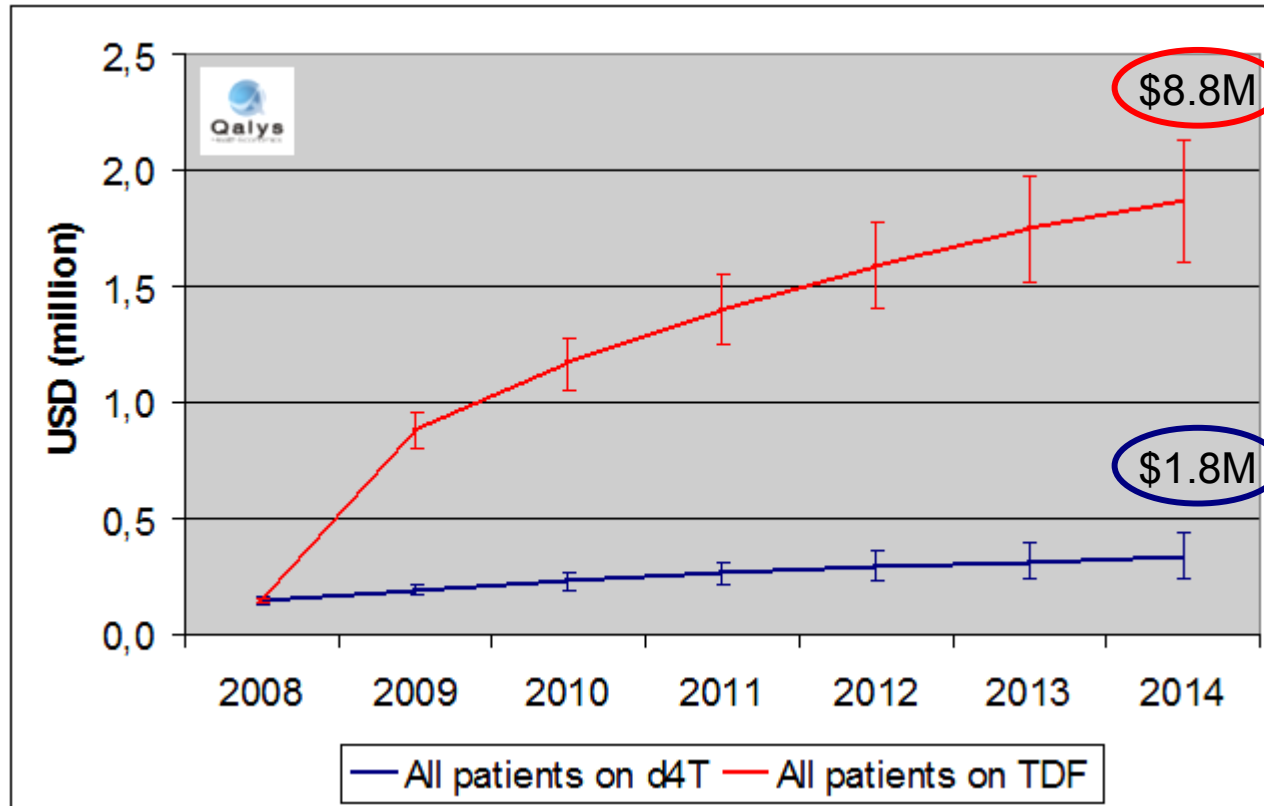
Forecasted ART prices, actual expenditures, annual budget

- ▶ **Sensitivity analyses**

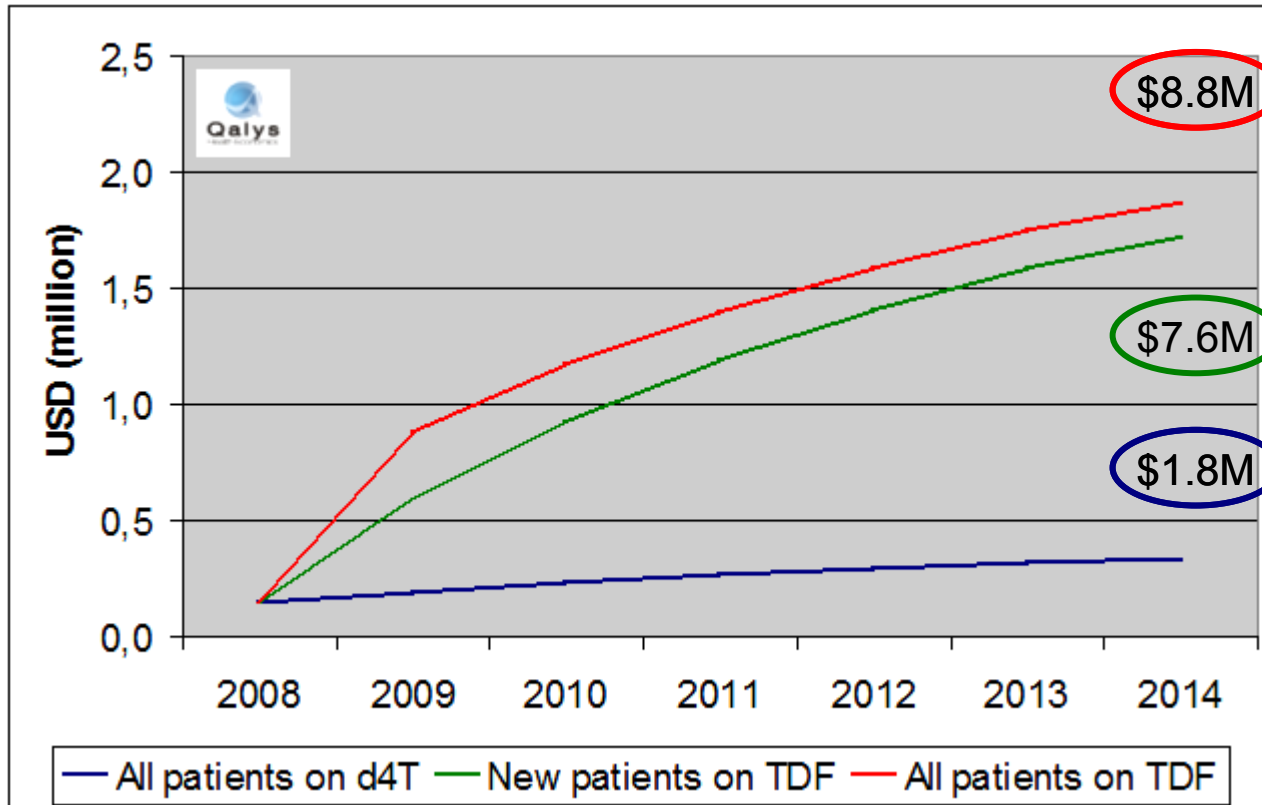
# Base case: All patients on d4T/3TC/NVP



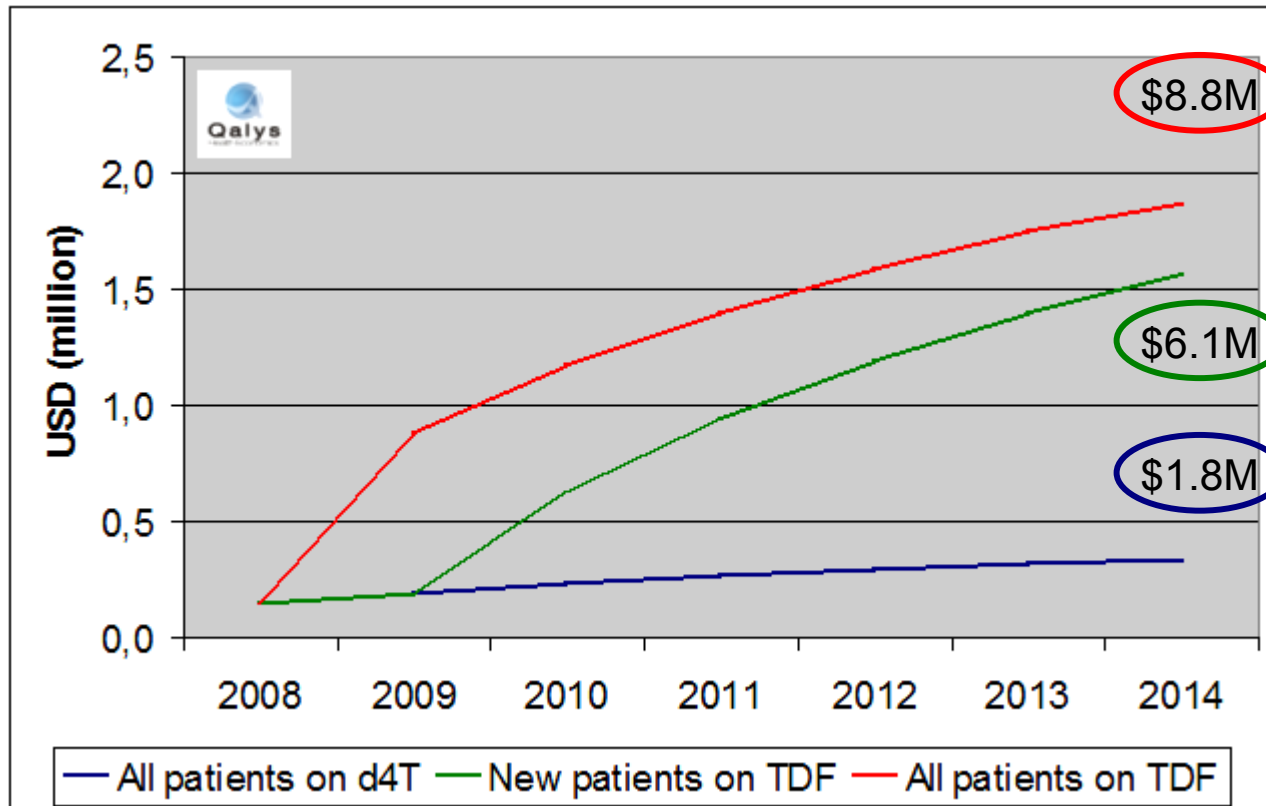
# All patients on TDF/3TC/EFV 2008



# Only new patients on TDF/3TC/EFV 2008

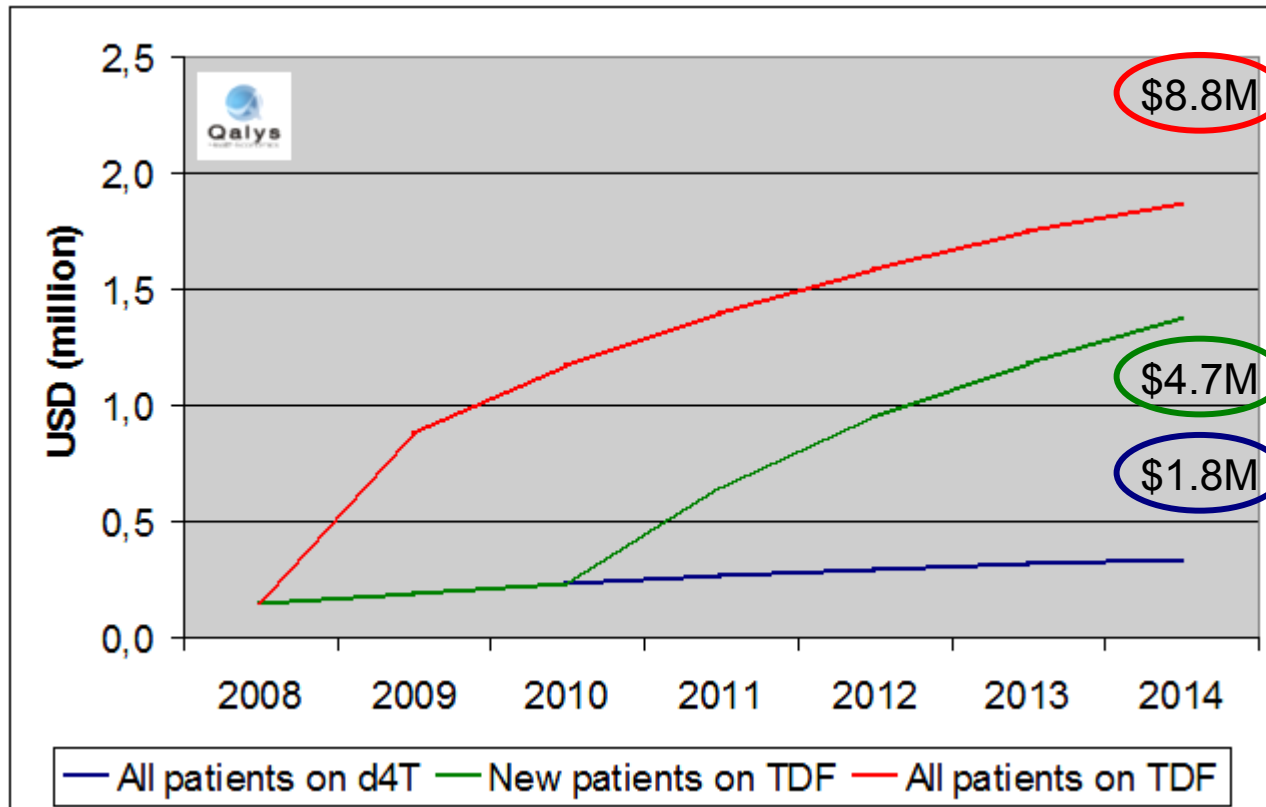


# Only new patients on TDF/3TC/EFV 2009

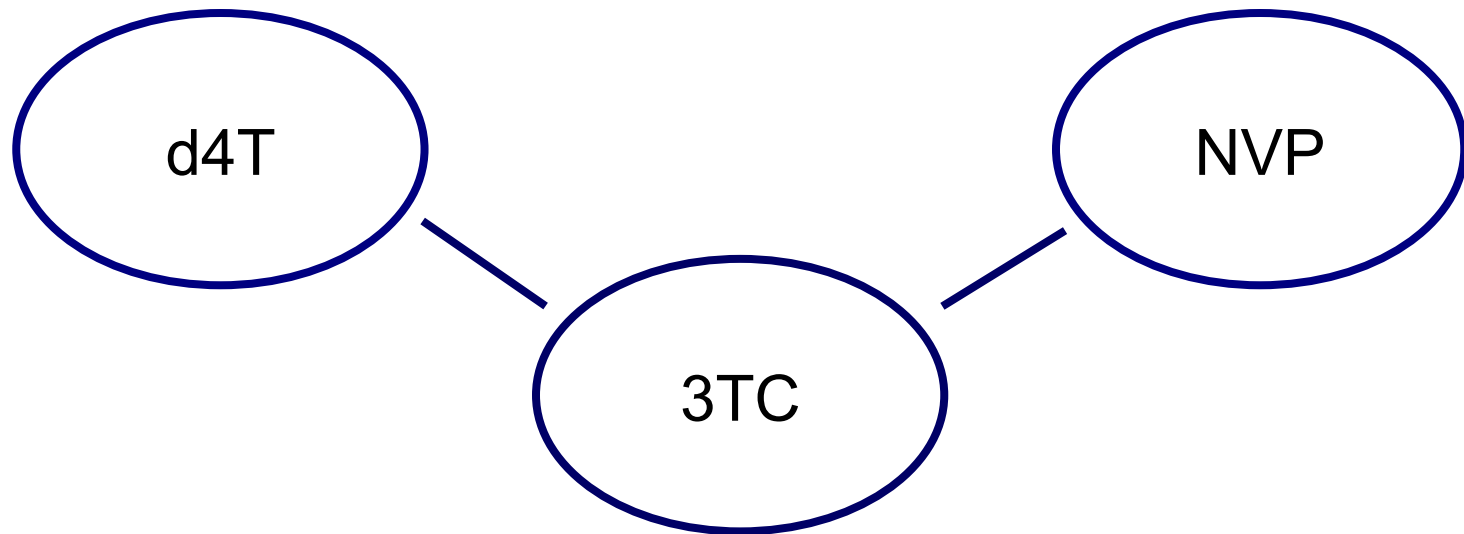




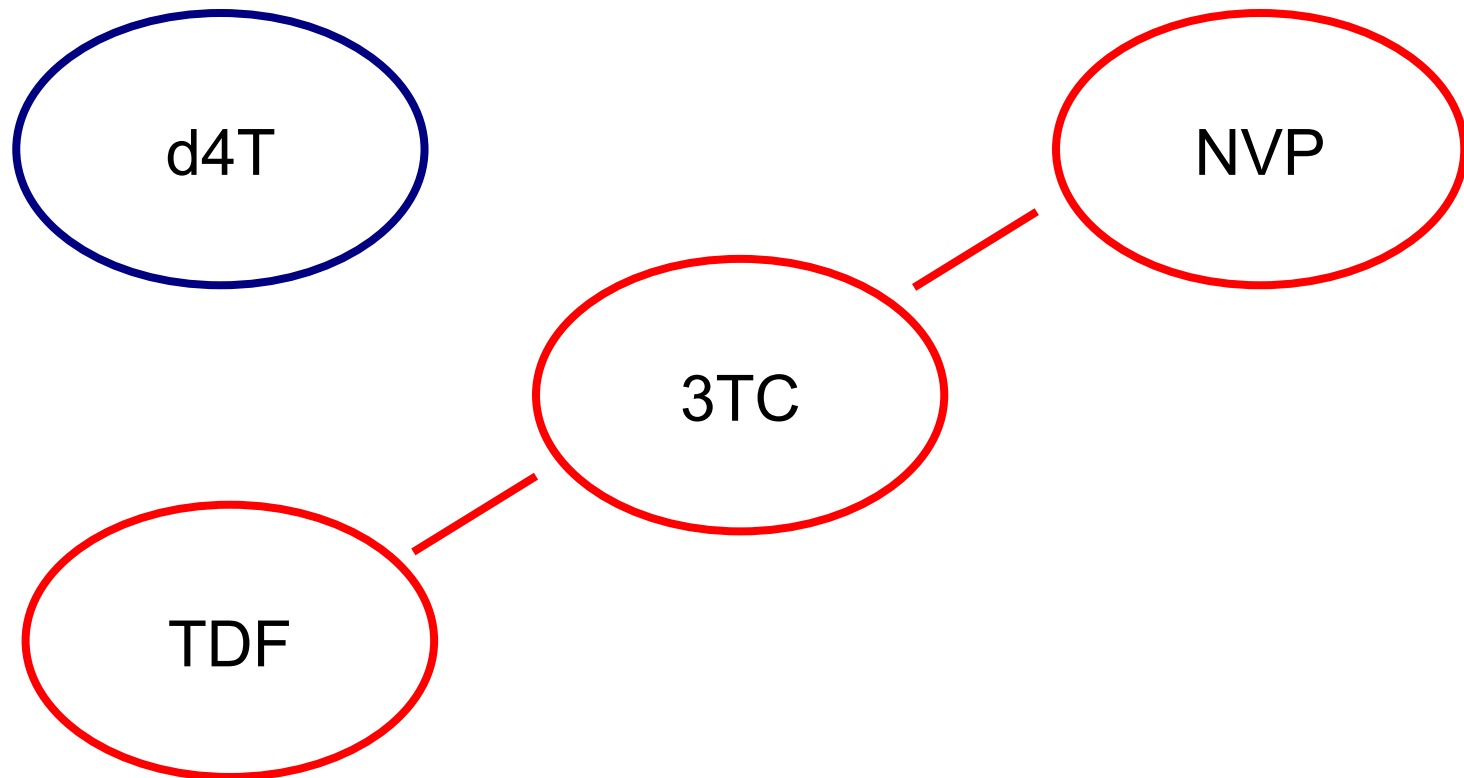
# Only new patients on TDF/3TC/EFV 2010



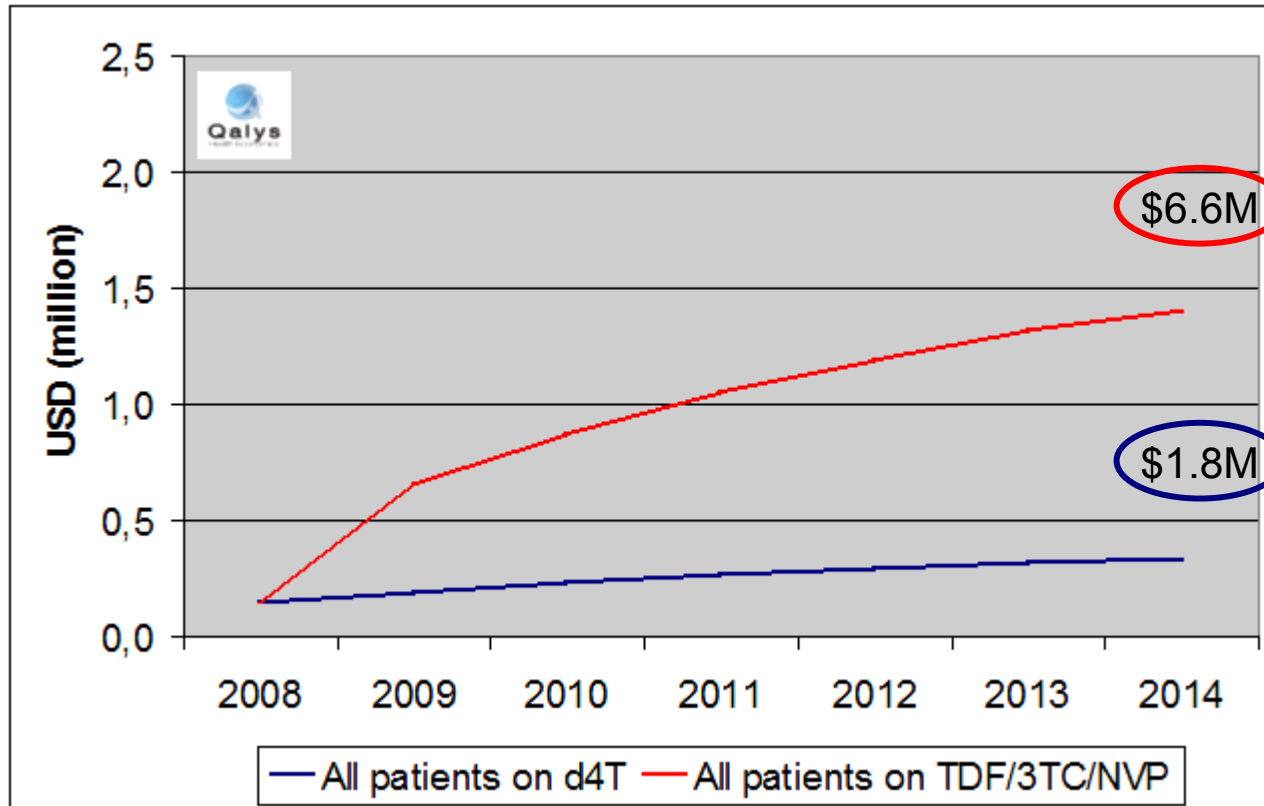
# Current first-line regimen



# Change to TDF/3TC/NVP



# All patients on TDF/3TC/NVP 2008



# ART Prices

<b>Drug</b>	<b>Current price</b>	<b>Price in 2014</b>	<b>Manufacturer</b>
TENOFOVIR	128 USD	88 USD	Hetero
LAMIVUDINE	35 USD	27 USD	Cipla
EFAVIRENZ	146 USD	101 USD	Hetero
FDC TDF/3TC/ EFV	365 USD 350 USD KIT		Matrix Cipla
d4T/3TC/NVP	82 USD 87 USD	61 USD	Aubindo Hetero
d4T	19 USD		Cipla

# Limitations

- ▶ Potential cost savings:  
from better toxicity profile of TDF
- ▶ ART price development
- ▶ Inadequate TDF survival data

# Summary

- ▶ Useful tool to forecast costs:

  - ART regimen changes

  - Scaling-up

  - Higher CD4 threshold

  - Forecasting human resource needs

- ▶ High cost of TDF and EFV

- ▶ Major barrier in resource poor settings

**Jari Kivela**  
Health Economist  
+31 20 8508497  
jari.kivela@qalys.eu

**Daniel O'Brien**  
HIV/AIDS Advisor  
MSF-OCA

**Clair Mills**  
Medical Director  
MSF-OCA



**Kalpana Sabapathy**  
HIV/AIDS Advisor  
MSF-OCA

**Field team**  
Epworth  
Zimbabwe