



# Assuring the delivery of third-line ART in Brazil

*CM Meiners-Chabin, AA Pereira, K Sakita*

Department of STD, AIDS and Viral Hepatitis  
Brazilian Ministry of Health

## IAEN 7<sup>th</sup> AIDS & Economics Pre- Conference

Washington D.C., July 20-21 2012



Secretaria de  
Vigilância em Saúde

Ministério da  
Saúde



# Access to third-line therapy



**2009/2010:** WHO guidelines address for the first time the need of third-line therapy in developing countries.

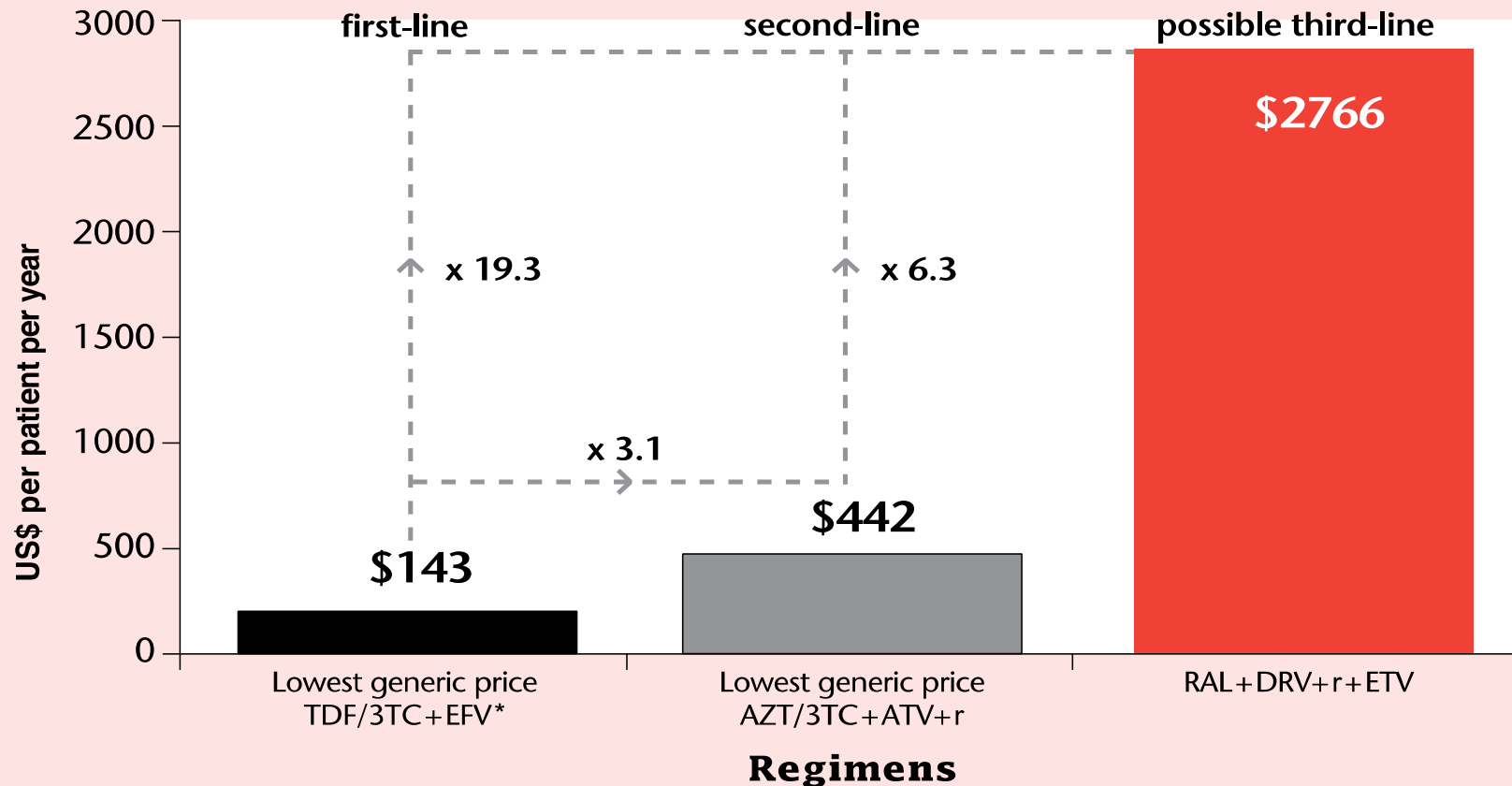
## **Outstanding challenges:**

- Scarce availability
- Cost barriers
- Ethical issues

# The time bomb



## Price comparisons of first-line, second-line and possible third-line



Source: MSF, 2011. Untangling the web of antiretroviral price reduction.  
Available at: <http://utw.msfacecess.org/>.

# Third-line therapy in Brazil



## **Prescription pre-requisites:**

- Confirmed virological failure
- Genotypic resistance test ( $\leq 12$  months) showing no full activity from ARVs in previous lines
- Regimen selection avoiding functional monotherapy (gradual inclusion of 3<sup>rd</sup>-line ARVs)
- Approval from referee physician (specific formulary)
- VL monitoring (every 6 months)

**Patient share:**  $\sim 8.7$  thousand (4%)

**Mean annual budget:** US\$ 119 million (2010/2011)

# Third-line ARVs delivered in Brazil



<b>Antiretroviral INN</b>	<b>Initial Delivery</b>	<b>Annual Cost per Patient</b>	<b>Number of Patients</b>	<b>Rank</b>
<b>Enfuvirtide (T-20)</b>	Jun/2005	\$ 12 802	736	4th
<b>Darunavir (DRV)</b>	Feb/2008	\$ 4 464	5 624	1st
<b>Raltegravir (RAL)</b>	Jan/2009	\$ 5 110	5 592	2nd
<b>Etravirine (ETR)</b>	Oct/2010	\$ 5 341	431	3rd
<b>Tipranavir (TPV)</b>	Mar/2011	\$ 3 293	15	<18 y

# Proposed analyses



- 1. Targeting access**
- 2. Monitoring treatment results**
- 3. Keeping the eye on costs**

# 1. Targeting access



**Objective:** to examine the correspondence btw guideline recommendations and ARV prescriptions

**Method of analysis:** multilinear regression (OLS)

- Dependent variable: ARV use (# patients/ARV)
- Explanatory variables:
  - ARV recommendation level (preferential, alternative, savage therapy, restricted use, non-recommended and other)
  - # years following the drug incorporation (time control)

# 1. Results



Dependent variable: Log(USE)	(2005-2011)		
	N=129		
Explanatory variables	$\beta$	SE	p-value
Constant	11.636***	0.690	<0.001
Recommendation (ref. PRF)			
<b>ALT</b>	- 1.734***	0.545	0.002
<b>SVG</b>	- 4.336***	0.651	<0.001
<b>RES</b>	- 2.630***	0.693	<0.001
<b>NRE</b>	- 8.931***	0.552	<0.001
<b>OTH</b>	- 10.334***	1.060	<0.001
Years after incorporation	- 0.019	0.047	0.690
Adjusted R <sup>2</sup>		<b>0.739</b>	



## 2. Monitoring treatment results



**Objective:** to check how effective the targeted use of third-line ARVs has been

**Method of analysis:** data has been crossed from ARV delivery and laboratorial exams information systems to allow comparing viral load test results at 6 month intervals following third-line treatment initiation

**Selected ARVs and period:**

- Darunavir (jan/2008 to jul/2011)
- Raltegravir (jan/2009 to jul/2011)

## 2. Results



### **Percentage of undetectable viral load in patients** (following third-line ARV initiation)

- At 6 months:
  - DRV: 72.1%
  - RAL: 78.2%
- At 24 months:
  - DRV: 77.9%
  - RAL: 83.3%

# 3. Keeping the eye on costs



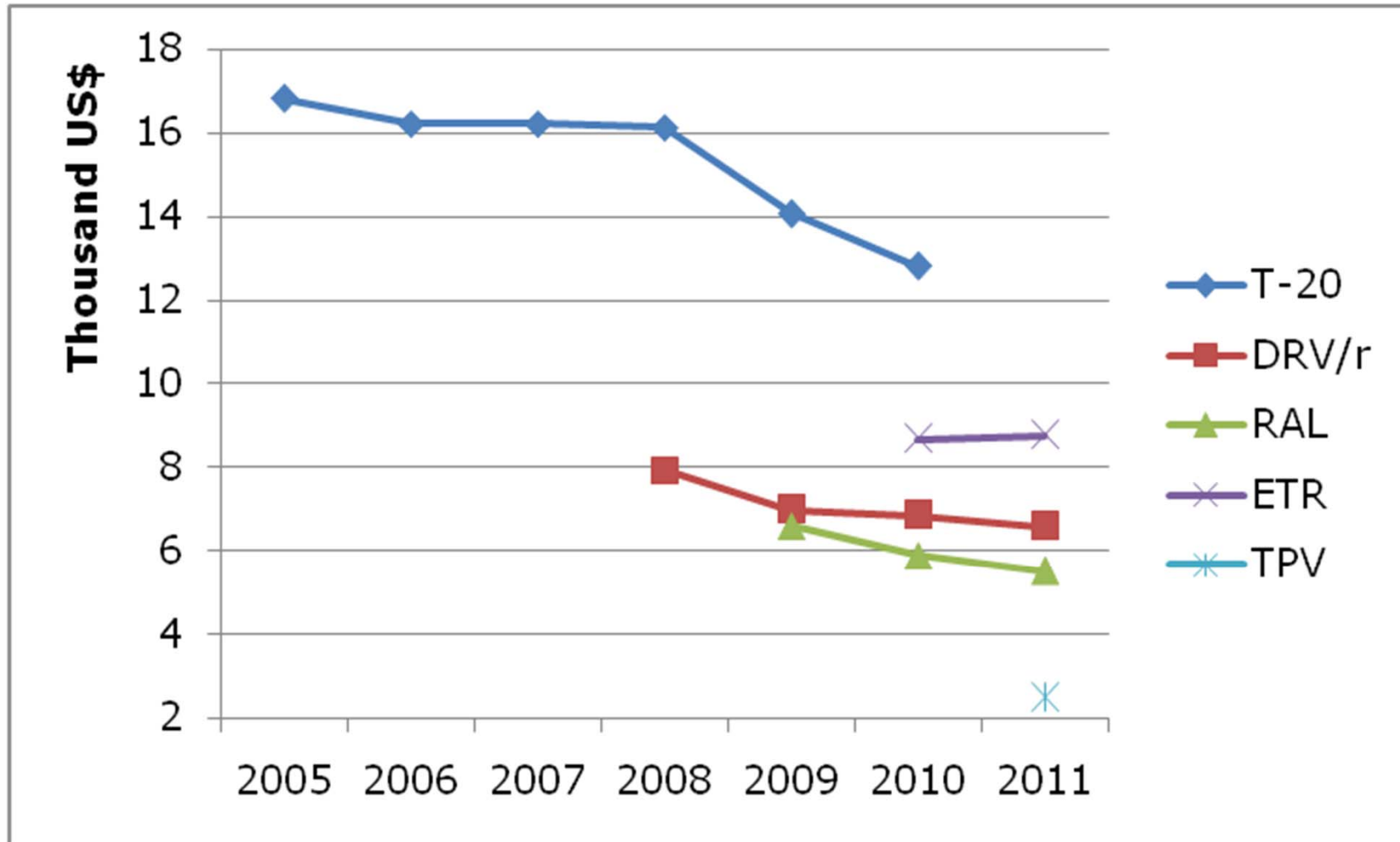
**Objective:** to analyze third-line ARV cost behavior and financial impact

**Method of analysis:** descriptive trend analysis over the 2005 – 2011 period

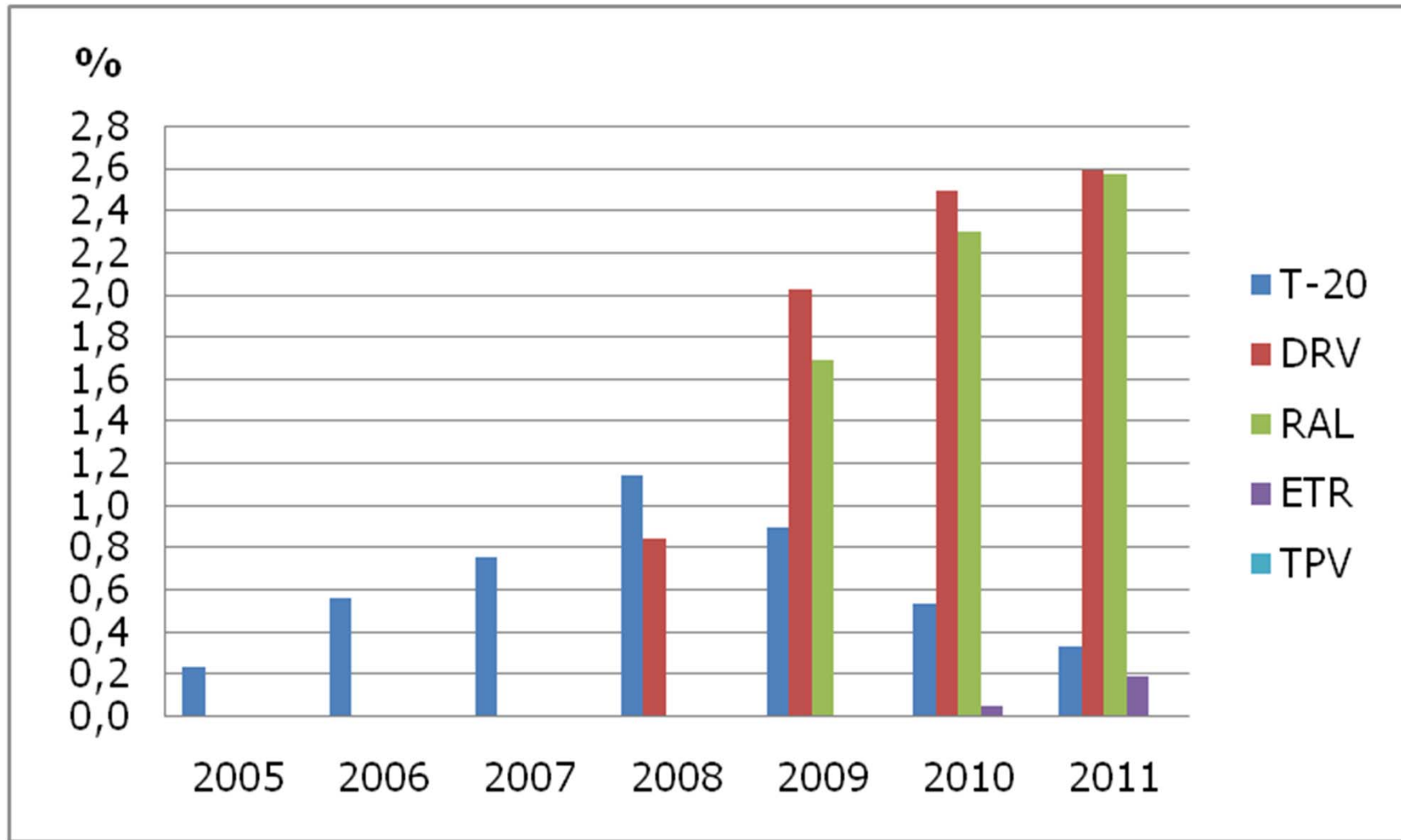
**Selected indicators:**

- ARV cost
- Patient share
- Budget share

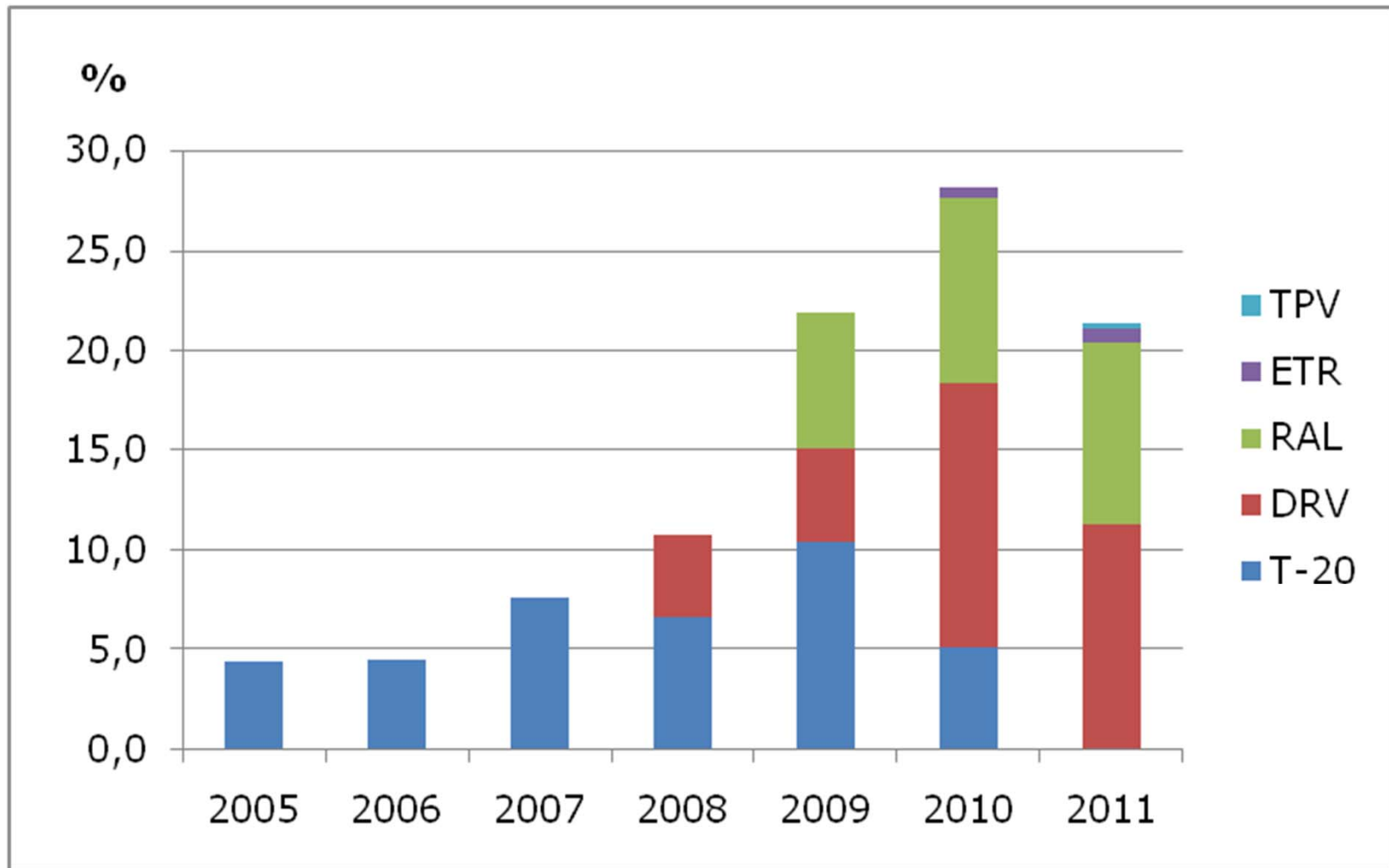
# 3. Results: ARV Cost Evolution



# 3. Results: ARV Patient Share



# 3. Results: ARV Budget Share



# Conclusions



- Restrictive measures on third-line ARV prescriptions allow restraining indiscriminate use, targeting patients without further treatment alternatives
- Timely use of laboratorial monitoring (viral load and resistance tests) help improving treatment results
- Although prices have tended to decrease over time, the cost of third-line ARVs remain disproportionately high leading to important budgetary impacts
- Originator prices continue being prohibitive in many low and middle income settings



**THANK YOU!**

**[www.aids.gov.br](http://www.aids.gov.br)**

*constance.meiners@aid.gov.br*



Secretaria de  
Vigilância em Saúde

Ministério da  
Saúde

