



# Impact of Option B on mother-to-child HIV transmission in Rwanda: an interrupted time series analysis

Monique Abimpaye, Hari S. Iyer, Michael Law, Catherine Kirk, Eric Remera, Placidie Mugwaneza, Neil Gupta

29-June-2015



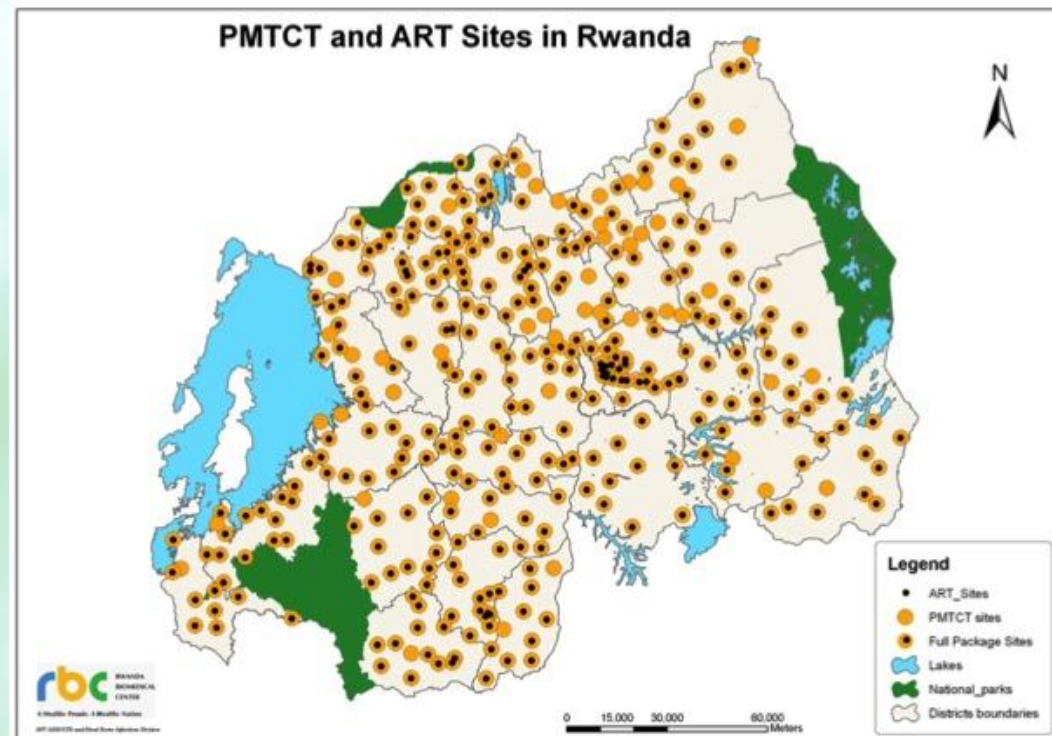
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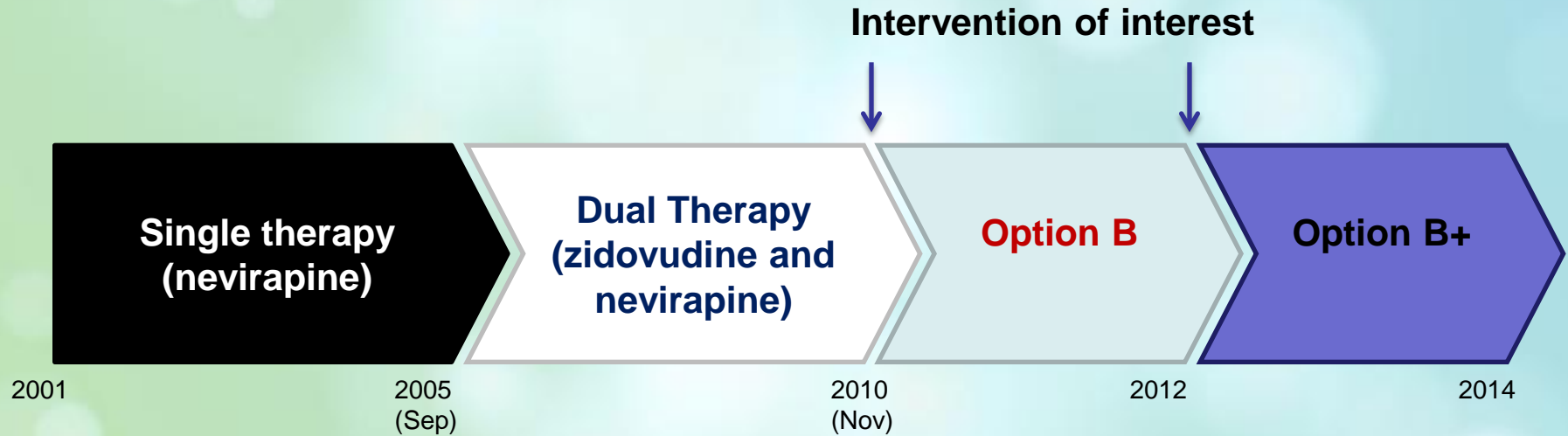
# Introduction

- Rwanda's has a national HIV prevalence of 3%, with higher rates of infection among women of childbearing age
- In Rwanda's decentralized health system, PMTCT is delivered by nurses at health centers and is integrated into antenatal care services at nearly all health facilities





# Introduction, cont.



## Option B recommends:

- All HIV+ pregnant women start HAART from 14 weeks of gestation through 1 week after cessation of breastfeeding.
- HIV-infected pregnant women with  $CD4 \leq 350$  start HAART for life.
- Infants may take daily NVP or twice-daily AZT from birth until 4 to 6 weeks of age.



# Objective

- The impact of WHO PMTCT guideline changes have not been well quantified at the national level
- This study aims to evaluate the impact of adopting Option B on mother-to-child HIV transmission in Rwanda



# Data Source: TRACNET

- TRACNET was established by Rwanda's Treatment and Research AIDS Centre (TRAC) and had been operating since September 2004 till July 2014.
- Data Managers on the health facility level report aggregated data on monthly basis.
- Indicators collected in TRACNET include those related to HIV prevention (VCT, PTMTCT, Male Circumcision) and Care and treatment (ARV)



# Methods: sampling facilities

<b>Year</b>	<b>Number of facilities in Rwanda offering PMTCT services in a given year</b>
2002	11
2005	209
2010	382
2011	412
2012	467
2013	488
2014	494

- We limited our study population to facilities that were providing PMTCT services over the entire period of interest (August 2010- July 2014).
- Our study population included HIV-exposed children attending 348 of facilities that had complete reporting on PMTCT outcomes in TRACNET from August 2010 to July 2014.



## Interrupted Time Series Analysis

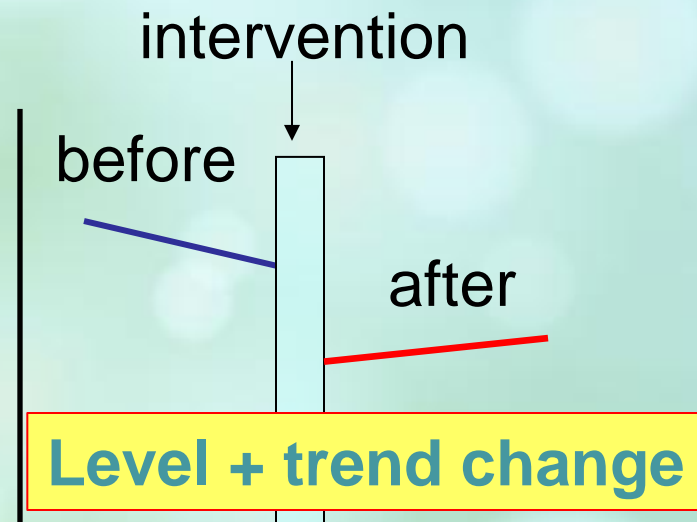
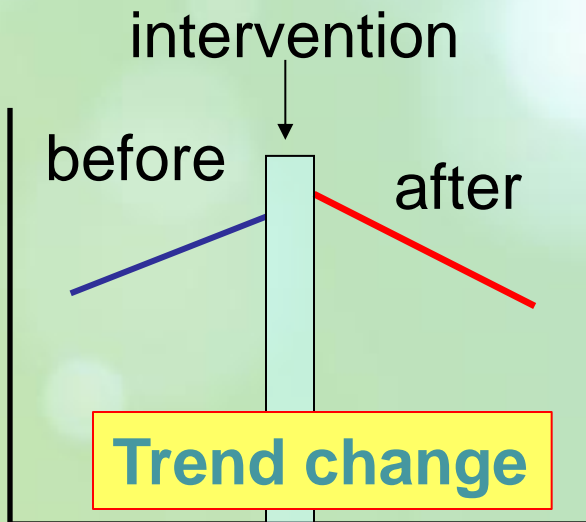
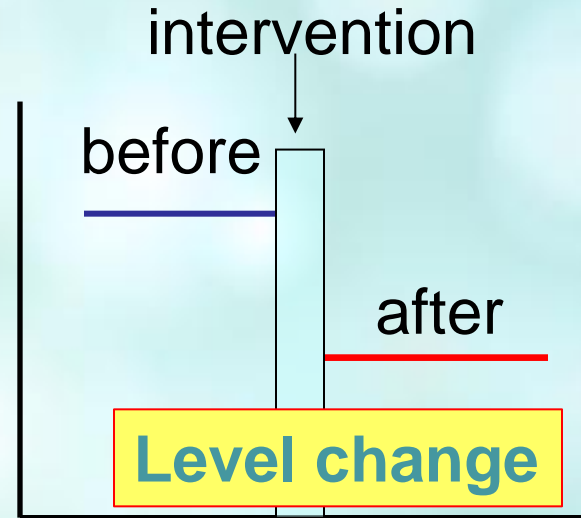
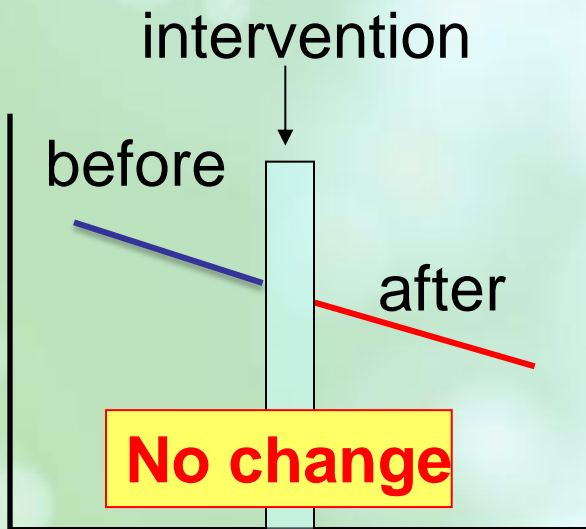
- Interrupted time series (ITS) analysis is used for evaluating effects of intervention or policy
- Strengths include the ability to observe changes resulting from an intervention over a number of data points instead of just two (pre v. post), the ability to model a counterfactual, and fewer threats to validity than other study designs
- Key assumption is that only one policy effect is introduced within the period
- Compare the level and trends in the indicator of interest before and after the policy change

# Methods:

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## Interrupted Time Series, cont.







# Methods: Outcome

- Created cohorts of patients based on tests/HIV-positive children at 18 months
  - Merged back all tests/HIV-positives for number of positive infants (month of birth+18 months), 6 weeks (month of 6 week test+16 months), 9 months (month of 9 months +9 months)
- **Outcome variable: Rate of HIV transmission at 18 months:**

$$\frac{\text{Positive tests}_{6\text{weeks}} + \text{Positive tests}_{9\text{months}} + \text{Positive tests}_{18\text{months}}}{\text{Tests}_{6\text{weeks}} + \text{Tests}_{9\text{months}} + \text{Tests}_{18\text{months}}} \times 100$$





# Results

The trend of mother-to-child HIV transmission at 18 months of age increased throughout the period prior to May 2012 (baseline trend 0.019/100, 95%CI: [-0.003, 0.042],  $p=0.096$ ).

Following the change in PMTCT guidelines, there was a reduction in both the level (-0.72/100, 95%CI: [-1.08, -0.36,  $p=0.0003$ ]) and the trend (-0.031/100, 95%CI: [-0.052, -0.0096],  $p=0.0066$ ) in the HIV transmission rate.

# Limitations

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- Cohorts are based on aggregate data, so some birth misclassification is possible (e.g. same babies may not exactly fall in each time period)
- 6-week positive tests results considered were not confirmed at all facilities, so could have overestimate of trends (although is constant throughout period, so will not change interpretation of level/trend shifts)
- We are looking at the subset of facilities that have provided PMTCT care during the whole period, newer facilities may have different results
- Other interventions occurring at similar time to adoption of option B/B+ may also have contributed to decline in MTCT



# Conclusion / Recommendations

- Implementation of WHO PMTCT guideline Option B was associated with a decrease in 18-month transmission rates from HIV infected mother to infants in Rwanda.
- The scale-up of PMTCT and ART care and treatment programs as well as other strategies, including improved adherence and earlier initiation of ART, could also have contributed to the decline in transmission.

# Acknowledgements

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- Patients and clinicians at study sites
- Ministry of Health, Rwanda
- Rwanda Biomedical Center
- All partners
- We gratefully acknowledge the support of the Doris Duke Charitable Foundation's African Health Initiative for training in interrupted time series methods.

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**Thank you**

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