Cost-Effectiveness of Dolutegravir in HIV-1 Treatment-Naive Patients in China

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Rationale

- China has a low overall prevalence of HIV-1 infection (0.037%) but a high proportion of patients (~500,000) living with HIV as of 2014[1]
- China has made substantial progress in funding its response to HIV treatment and management, with 99% of funding sourced domestically in 2015[2]
- All the WHO-recommended first-line regimens (ARTs) are currently reimbursed under the National Reimbursement Drug List, except DTG-based regimens[3]
- DTG, launched in China in 2016, has shown superiority against multiple ARTs and is widely considered to be the most efficacious third agent for treatment-naive patients with HIV infection[4-7]

ART, antiretroviral therapy; DTG, dolutegravir; WHO, World Health Organization.

1. UNAIDS. 2015. **2.** UNAIDS. 2016. **3.** WHO. 2016. **4.** Clotet et al. *Lancet*. 2014;383:2222-2231. **5.** Raffi et al. *Lancet*. 2013;381:735-743. **6.** Walmsley et al. *N Engl J Med*. 2013;369:1807-1818. **7.** Kanters et al. *Lancet HIV*. 2016;3:e510-e520.

Objective and Methods

- The objective of this analysis was to assess the cost-effectiveness of DTG compared with RAL and LPV/r in treatment-naive patients with HIV in China
- Backbone for all comparators—ABC + 3TC
- Perspective—Societal
- Time horizon—Patient lifetime
- Discounting rate—2.3% for costs and benefits

ABC, abacavir; DTG, dolutegravir; LPV/r, ritonavir-boosted lopinavir; RAL, raltegravir; 3TC, lamivudine.

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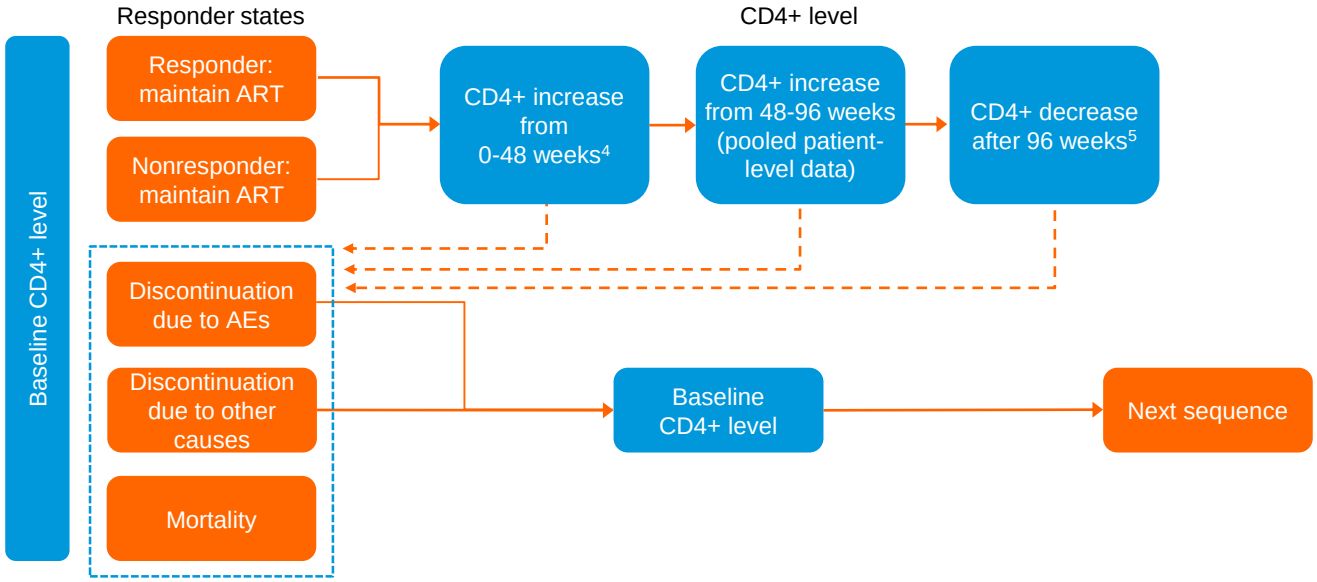
Model Description

- Markov model with 5 CD4+–based health states and 5 responder states
- Patients similar to those in DTG phase III trials (age, 37 y; 15% women)[1-3]
- Response rates and CD4 changes—From published meta-analyses[4]
- Patients can have a maximum of 3 lines of treatment



AE, adverse event; ART, antiretroviral therapy; DTG, dolutegravir.

1. Clotet et al. *Lancet*. 2014;383:2222-2231. **2.** Raffi et al. *Lancet*. 2013;381:735-743. **3.** Walmsley et al. *N Engl J Med*. 2013;369:1807-1818. **4.** Patel et al. *PLoS One*. 2014;9:e105653. **5.** Mauskopf et al. *AIDS*. 2012;26:355-364.

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Model Inputs

Outcomes

- Health state utilities—From DTG phase III trials[1-3]
- Disutilities—For AEs (>20% incidence) and opportunistic infections—From published sources[4-6]

Costs

- ART costs—RMB 430/mo for all comparators
- AEs—RMB 155/event
- Opportunistic infections and CVD—RMB 8,147/event
- Hospitalization—RMB 8,494/event
- Indirect costs—RMB 3,250/mo

AE, adverse event; ART, antiretroviral therapy; CVD, cardiovascular disease; DTG, dolutegravir; RMB, renminbi.

1. Clotet et al. *Lancet*. 2014;383:2222-2231. **2.** Raffi et al. *Lancet*. 2013;381:735-743. **3.** Walmsley et al. *N Engl J Med*. 2013;369:1807-1818. **4.** Patel et al. *PLoS One*. 2014;9:e105653. **5.** Franks et al. *Med Care*. 2006;44:478-485. **6.** Paltiel et al. *Med Decis Making*. 1998;18(2 suppl):S93-S105.

Results

- DTG was associated with favorable treatment outcomes compared with RAL or LPV/r

	DTG + ABC/3TC	RAL + ABC/3TC	LPV/r + ABC/3TC
Outcomes			
Responders, %	73.0	66.6	56.6
QALY	12.88	12.76	12.40
Costs, RMB			
Total	749,856	750,441	746,214
Treatment	64,027	61,903	60,047
HIV management	643,713	644,633	640,019
Indirect	42,116	43,906	46,148
Incremental ratio			
Cost per responder	—	Dominated	22,214
Cost per QALY	—	Dominated	7,583

DTG, dolutegravir; FTC, emtricitabine; LPV/r, ritonavir-boosted lopinavir; QALY, quality-adjusted life-years; RAL, raltegravir; RMB, renminbi; TDF, tenofovir disoproxil fumarate.

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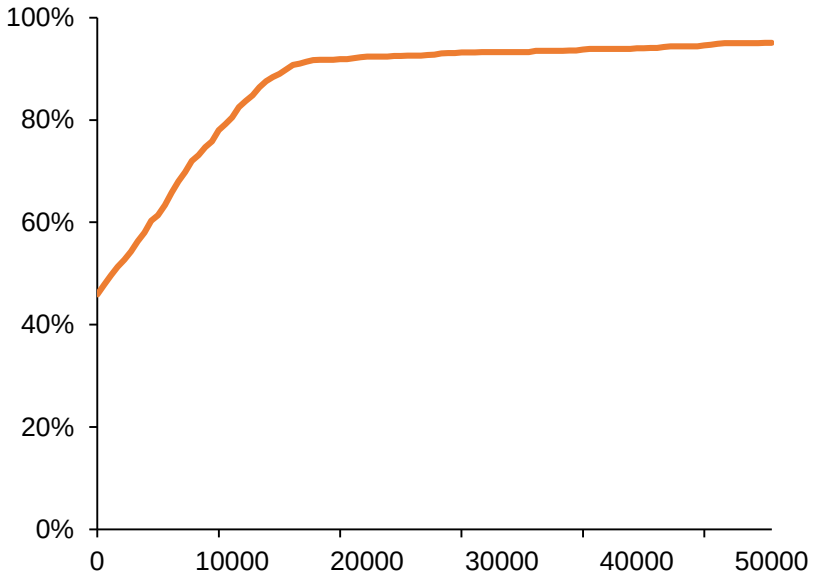
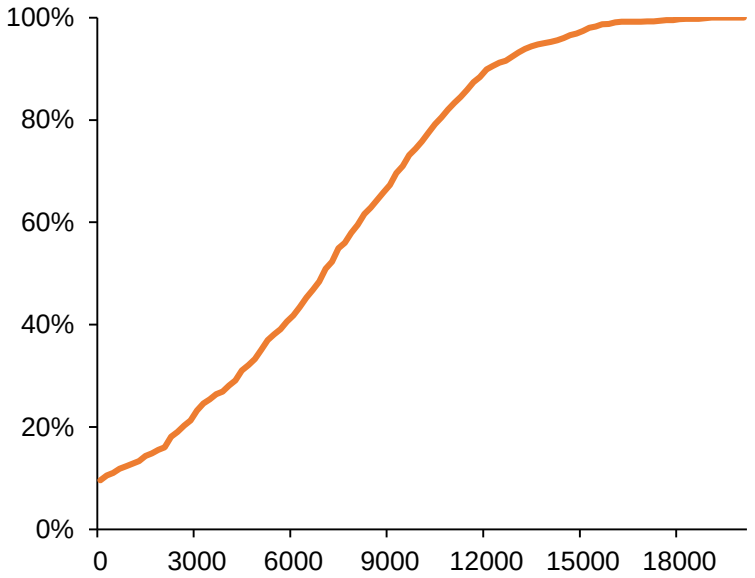
Probabilistic Analyses

- Probabilistic analyses confirmed the results
- At a threshold of RMB 32,000/QALY, the probability of DTG being cost-effective was 93.3% vs RAL and 100% vs LPV/r

DTG vs RAL



DTG vs LPV/r



DTG, dolutegravir; LPV/r, ritonavir-boosted lopinavir; QALY, quality-adjusted life-years; RAL, raltegravir; RMB, renminbi.

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Conclusions

- DTG was associated with higher QALY compared with RAL and LPV/r and lower total healthcare costs compared with RAL
- DTG can be considered as a cost-effective alternative to RAL and LPV/r in the public reimbursement system in China
- These results need to be further confirmed with long-term, real-world studies

DTG, dolutegravir; LPV/r, ritonavir-boosted lopinavir; QALY, quality-adjusted life-years; RAL, raltegravir.

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