

Clinical and Economic Outcomes of Non-Adherence to Highly Active Antiretroviral Therapy in Patients with HIV

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Background

- Non-adherence with highly active antiretroviral therapy (HAART) is common in typical HIV patient care settings
- The clinical and economic consequences of non-adherence in this setting have not been well described

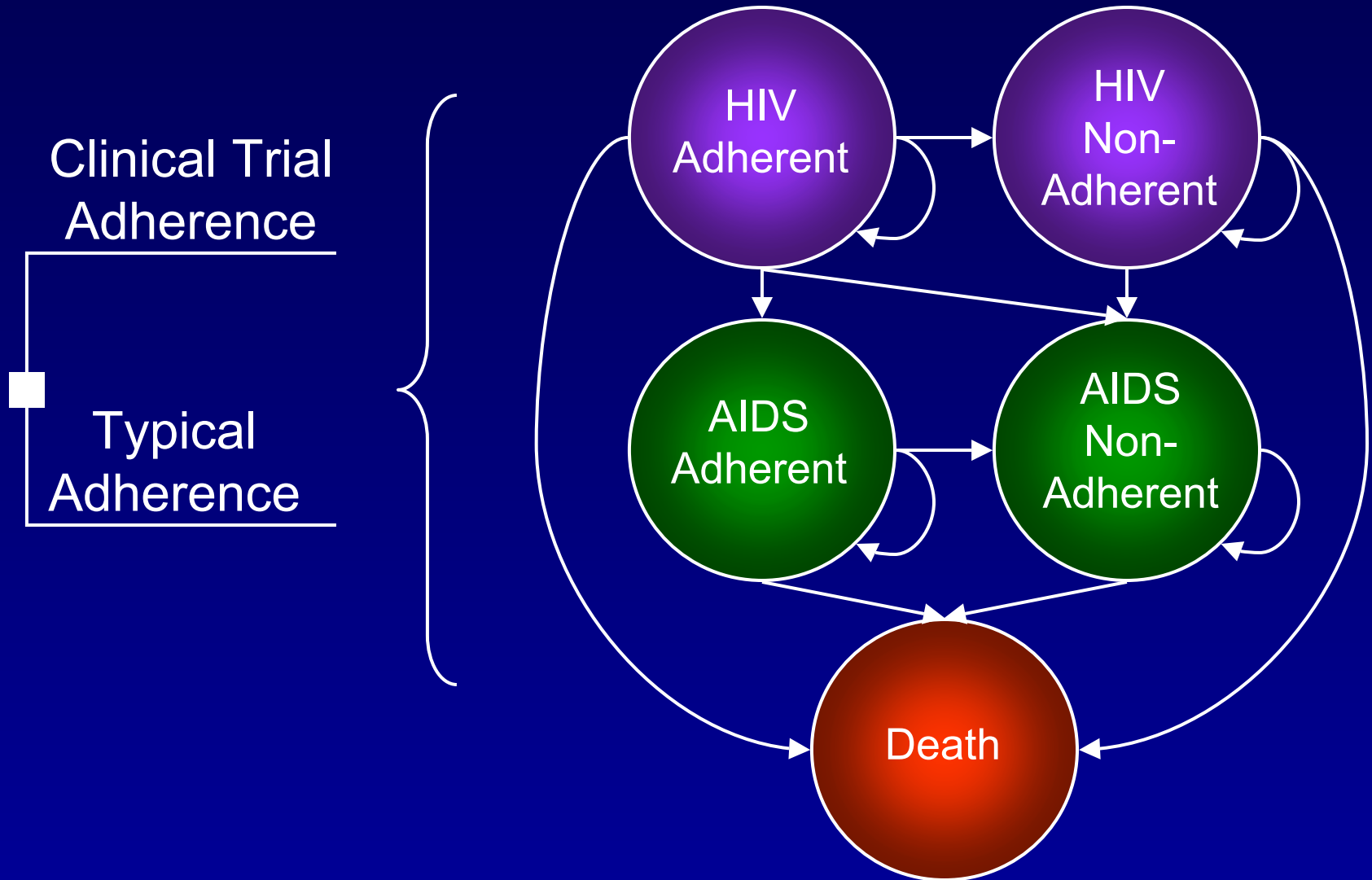
Objectives

- To quantify the clinical and economic effects of non-adherence with HAART in treatment-naïve HIV patients
- To estimate the cost-effectiveness of improving adherence with HAART

Methods

- Markov model to project quality-adjusted life expectancy and direct medical costs for HIV patients on an initial regimen of HAART with efavirenz, lamivudine and stavudine
- Compared two adherence scenarios: “**clinical trial**” (representing ideal utilization observed in clinical trials) and “**typical**” (based on observational studies in actual practice)

Markov Model



Modeling Assumptions

- Base case population: 33 years old, antiretroviral naïve, HIV infected with a baseline viral load of $4.8 \log_{10}$ copies/ml and a CD4 count of 277 cells/mm^3
- Rates of disease progression based on viral load, CD4 count, and adherence to therapy
- Patients changed therapy regimens if viral load ≥ 400 copies/ml or if they transitioned to AIDS
- After four regimens, patients followed natural history of the disease

Adherence

- Adherence defined as consumption of $\geq 95\%$ of prescribed HAART doses
- Average proportion of drugs consumed:
 - If adherent = 0.98
 - If non-adherent = 0.55
- Proportion of adherent patients in:
 - Clinical trial group = 1.0
 - Typical group = 0.52 at 18.6 months

Treatment

Antiretroviral Regimen (% VL suppressed)

	1st	2nd	3rd	4 th
Adherent	0.64	0.60	0.34	0.22
Non-adherent	0.31	0.27	0.11	0.07

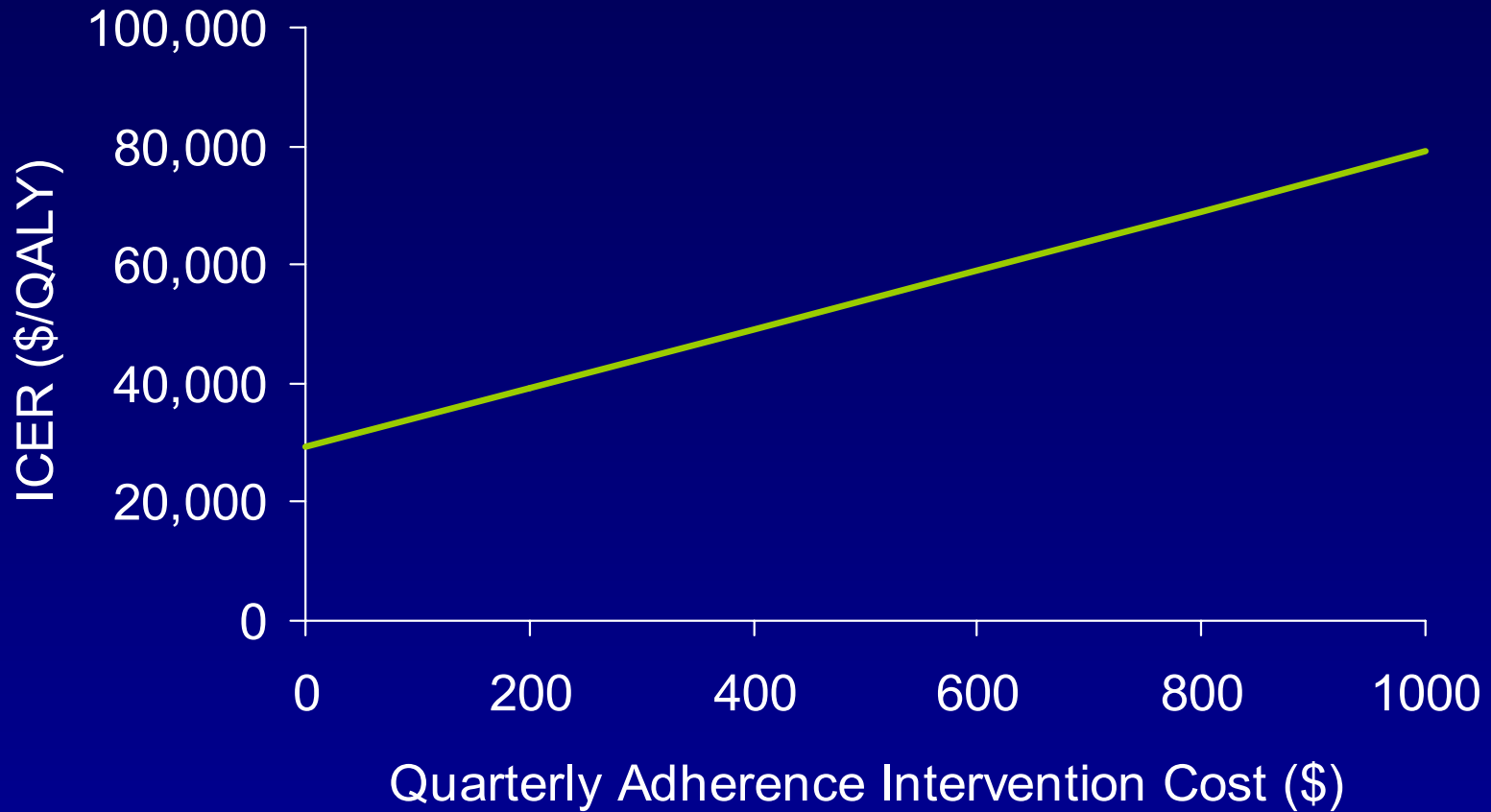
Quality of Life and Costs

Variable	Base Case Value
<u>Quality of life weights</u>	
HIV	0.80
AIDS	0.61
<u>Annual costs</u>	
Drugs	12,637
HIV	6,730
AIDS	11,601
AIDS end-of-life care	x5.08
1 treatment failure	x1.21
2-4 treatment failures	x1.56

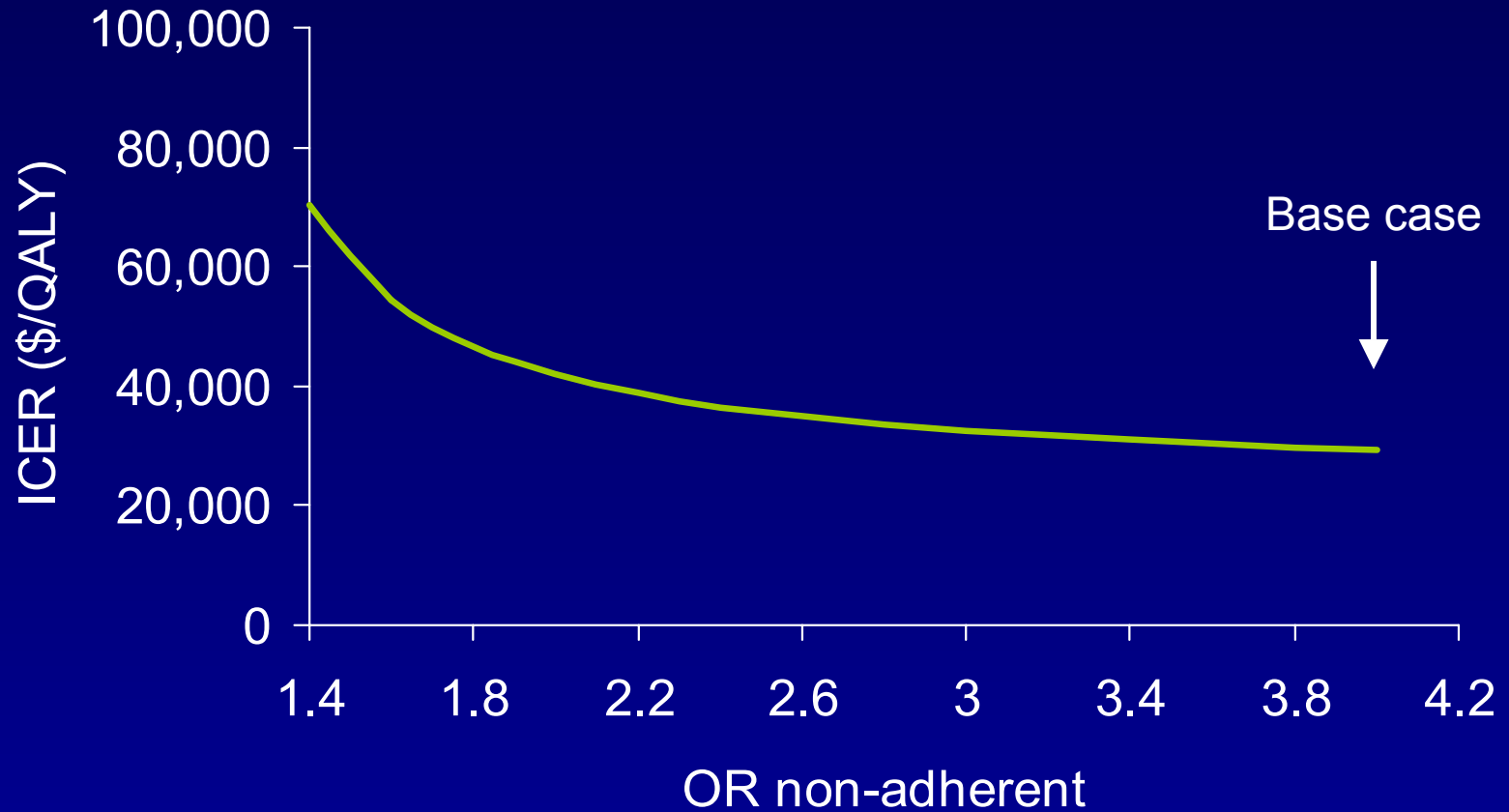
Health and Economic Outcomes

Scenario	Lifetime Costs (US\$)	LE (years)	QALY (years)	Incremental cost/QALY gained
<u>Without Discounting</u>				
Typical	\$425K	16.9	12.0	--
Clinical Trial	\$482K	19.2	13.8	\$30,600
<u>With Discounting</u>				
Typical	\$308K	12.5	9.0	--
Clinical Trial	\$341K	13.8	10.2	\$29,400

Sensitivity Analysis: Cost of Adherence Intervention



Sensitivity Analysis: Antiretroviral Efficacy (Non-Adherent)



Summary

- Typical adherence with HAART reduces quality adjusted life expectancy by about 12% compared to clinical trial adherence
- Adherence at clinical trial levels is relatively cost-effective at \$29,400 per QALY gained
- The cost per QALY gained to improve adherence from typical to trial levels did not exceed \$50K until the intervention cost exceeded \$1600 per patient per year