

The clinical and economic impact of interventions to prevent loss to follow-up (LTFU) in resource-limited settings.

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Background: The survival benefits of antiretroviral therapy (ART) depend on adherence to medications and maintenance of care. Data from resource-limited settings show LTFU rates within 6 months of ART initiation of 5-40%. Our objective was to project the clinical impact and cost-effectiveness (C-E) of interventions to prevent LTFU in HIV care in resource-limited settings.

Methods: We used the CEPAC International simulation model of HIV disease to project life expectancy (LE) losses for patients LTFU at five specific times: before ART initiation, and after 1, 3, 6, or 12 months on ART. Natural history and ART efficacy data were from published studies and included 48-week viral suppression of 89% and 79% for 1st and 2nd-line ART. LTFU rates and CD4 counts at initiation were from the ART-LINC participating Côte d'Ivoire cohort (LTFU 13%, mean CD4 149/ul at ART initiation). We estimated the survival benefits and C-E of an intervention that decreases LTFU by 50% at each time point and costs \$4/person/month. We varied program costs and effectiveness in sensitivity analyses.

Results: Probabilities of LTFU ranged from 1.1% before ART initiation to 4.2% after 12 months (Table). Life expectancy with 100% retention in care was estimated at 99.7 months. Survival losses

Time when LTFU	LTFU (%)	LE/person by LTFU time (months)	LE lost/person (months)
Before ART initiation	1.1	17.6	82.1
1-3 months	1.3	21.7	78.0
3-6 months	2.8	28.6	71.1
6-12 months	3.8	32.0	67.7
After 12 months	4.2	50.7	49.0
Overall	13.2	35.1	64.6

from LTFU ranged from 82.1 months for patients lost before ART initiation to 49.0 months for patients lost after 12 months. For patients retained in care by the intervention, mean LE gain was 64.6 months. Averaged across all patients, the program increased mean LE from 91.2 to 95.4 months.

Compared to a program without LTFU prevention, per person discounted costs increased from \$6,070 to \$6,500, with a C-E ratio of \$1,530/year of life saved. The C-E ratios were <3X the Gross Domestic Product per capita for Côte d'Ivoire (\$4,653)—a suggested threshold for “cost-effectiveness”—for interventions costing \$4/person/month if LTFU was reduced by $\geq 25\%$, or \$8/person/month if LTFU was reduced by $\geq 50\%$.

Conclusion: Interventions that prevent LTFU in resource-limited settings would substantially improve survival, and would be cost-effective by international criteria. A commitment to start ART in these settings should be matched by a commitment to prevent LTFU.

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