

# Costs and Outcomes of AIDS Treatment Delivery in South Africa: How Much Does It Cost to Keep A Patient In Care and Responding?

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# Objectives

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- Little is known about the costs of providing ART under different delivery models or about the how resource inputs affect patient outcomes.
- Objectives were to:
  - Develop a practical methodology for evaluating cost-effectiveness using existing data.
  - For various models of treatment delivery, estimate the cost per patient:
    - Initiated on ART.
    - In care and responding to therapy 12 months after ART initiation.
  - Explore the relationship between resources used and outcomes achieved.

# Data Collection

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- Selected sites representing common or promising models of treatment delivery in South Africa.
- At each site, enrolled a sample comprising the first 100 adult patients who:
  - Initiated ART in 2005; and
  - Did not transfer to another site in first 12 months after ART initiation.
- Collected data on:
  - All resources used by site to treatment the sample (from medical records).
  - Treatment outcomes for the sample (from medical records).
  - Unit cost estimates for resources used (from site managers and financial records).

# Data Analysis (Costs)

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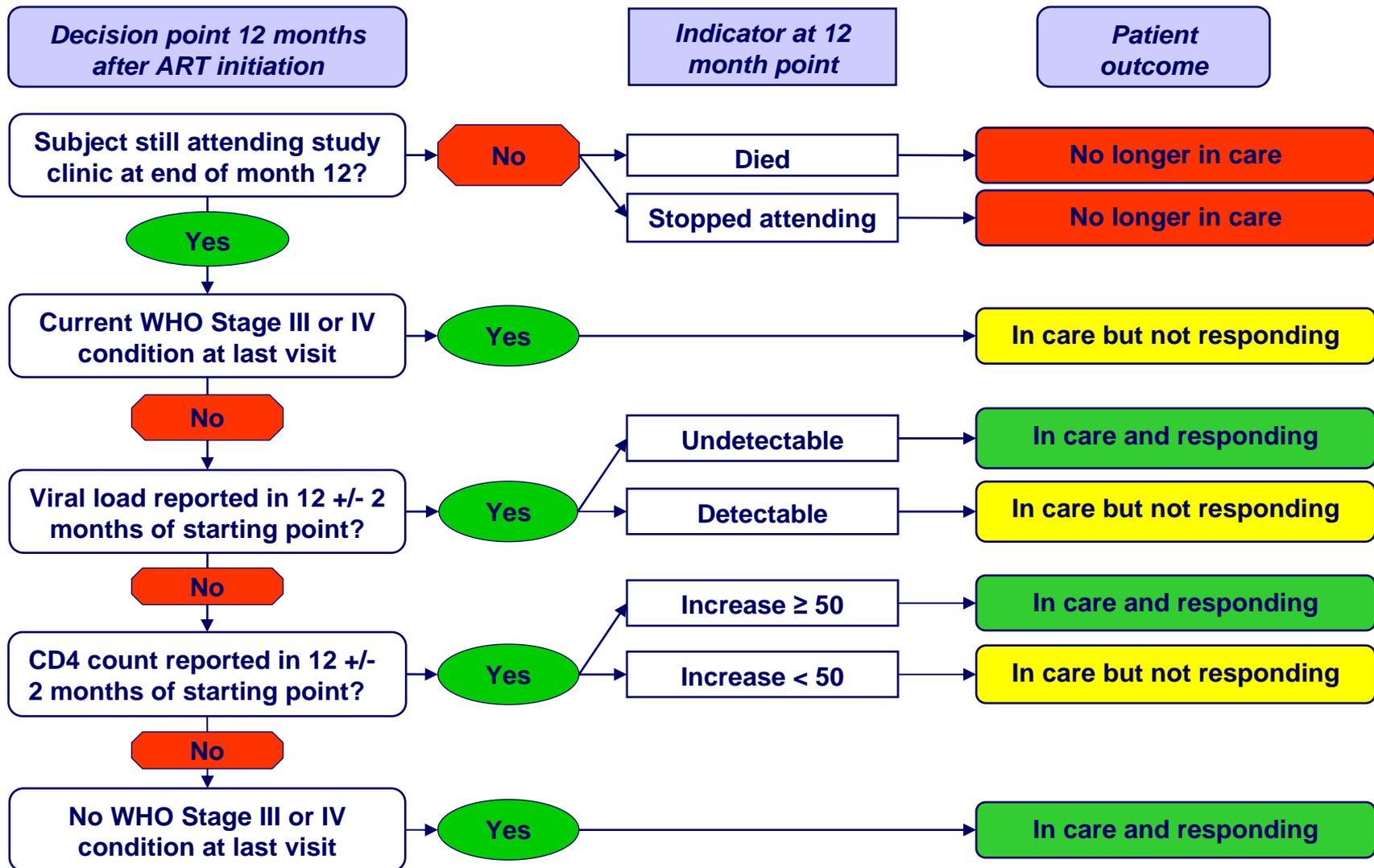
- Variable resources = quantity used x cost per item (drugs, lab tests, outpatient visits).
- Fixed resources = average fixed cost/month x number of months each subject was in care (infrastructure, shared staff, etc.).
- Cost estimates include all resources used by provider, independent of who pays (not cost to PEPFAR).

# Data Analysis (Outcomes)

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- Outcomes assessed 12 months + / - 2 months (i.e. 10-14 months) after starting ART.
- Three outcomes categories defined:
  - **IC**: “In care and responding”
  - **NR**: “In care but not responding”
  - **NIC**: “No longer in care at initiating clinic.”
- Each subject assigned to one outcome category based on existing information in medical record.

# Data Analysis (Outcomes)



# Sites

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	Site 1	Site 2	Site 3
<i>Facility type:</i>	Referral hospital	Private GPs	AIDS clinic
<i>Sector:</i>	Public	Private	NGO
<i>Setting:</i>	Urban (large)	Urban (small)	Rural
<i>Province:</i>	Gauteng	Multiple	Mpumalanga
<i>Funding:</i>	Government + PEPFAR	PEPFAR	PEPFAR + patient fees
<i># on ART (Mar 07):</i>	6,000	1,400	900

# Average Cost Per Outcome, Months 0-12

Outcome	Site 1 (Public hospital)	Site 2 (Private GPs)	Site 3 (Rural clinic)
All outcomes (cost/patient treated) (N)	\$814	\$896	\$932
In care and responding (IC)	\$971	\$1,168*	\$1,157*
In care but not responding (NR)	\$1,090	\$1,108	\$1,113
No longer in care (NIC)	\$335	\$567	\$368

All costs are in 2006 US dollars (R6.8=\$1).

\*Difference from Site 1 significant at 5% level.

# Outcomes

Outcome at month 12 +/- 2	Site 1 (Public hospital) (n=100)	Site 2 (Private GPs) (n=100)	Site 3 (Rural clinic) (n=100)
In care and responding (IC)	67 (67%)	52 (52%)	63 (63%)
In care but not responding (NR)	7 (7%)	3 (3%)	9 (9%)
No longer in care at site (NIC)	26 (26%)	45 (45%)	28 (28%)
RR [95% CI]*	1.00	0.78 [0.61-0.98]	0.94 [0.77-1.15]

\*Relative risk of being in care and responding at 12 months, with Site 1 as the reference.

# Cost-Outcome Ratios

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Ratios	Site 1 (Public hospital)	Site 2 (Private GPs)	Site 3 (Rural clinic)	% diff. highest- lowest
Average cost per patient treated (= all costs / all patients)	\$814	\$896	\$932	14%
Average cost per patient in care and responding (= IC costs / IC patients)	\$971	\$1,168	\$1,157	20%
Proportion of patients in care and responding	0.67	0.52	0.63	29%
<b>Average cost to produce a patient in care and responding (= all costs / IC patients)</b>	<b>\$1,215</b>	<b>\$1,723</b>	<b>\$1,480</b>	<b>42%</b>

# Breakdown of Cost Per Patient Treated

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Cost	Site 1 (Public hospital)	Site 2 (Private GPs)	Site 3 (Rural clinic)	% difference <b>highest-</b> <b>lowest</b>
Drugs	\$429	<b>\$500</b>	\$399	25%
Labs	<b>\$197</b>	\$74	\$111	166%
Visits	\$116	\$79	<b>\$185</b>	134%
Fixed costs	\$72	<b>\$242</b>	\$238	236%
Total	<b>\$814</b>	\$896	<b>\$932</b>	14%

# Limitations of the Study

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- Only 3 sites analyzed so far; generalizability limited.
- Sample size at each site is too small for stratification.
- Estimates are of average, not marginal, costs.
- Does not take patient differences into account.
- Excludes some potentially important costs:
  - Inpatient care
  - Care provided by other facilities (e.g. for TB)
  - Costs to patients themselves
  - Treatment programme management above the level of the individual facility or project.

# Preliminary Conclusions

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- Costs of ART differ by site (and presumably model), but magnitude of differences is not huge.
- Cost-effectiveness of ART can be sabotaged by high costs, large numbers of patients not remaining in care or not responding, or both.
- Once outcomes are considered, perceptions of resource investments may change (i.e., spending more might make sense).
- Treatment facility scale is likely an important determinant of costs.
- Patient characteristics are probably an important determinant of outcomes.

# Acknowledgements

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