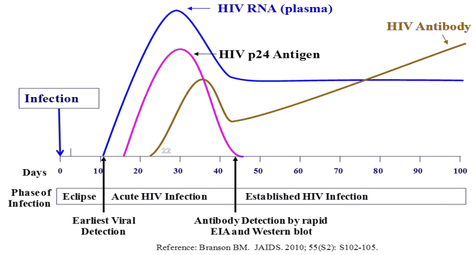
Cost Effectiveness of Adding 4th-Generation Immunoassay Screening After a Negative Rapid HIV Test

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BACKGROUND

- Point of care rapid tests are essential components of HIV prevention and preferred by many MSM, yet may not detect early HIV infection (Gray, 2013).
- 4th generation HIV Ag/Ab assay (4G) can detect HIV as early as 16 days after infection before antibody is detectable.



Reference: Branson BM. JAIDS. 2010; 55(S2): S102-105.

THE STOP STUDY

- A multi-site, prospective study of HIV testing methods to detect acute HIV (AHI) in STD clinics and community-based organizations in New York City, San Francisco, and North Carolina.
- Rapid/4G Substudy: Can reflex 4G HIV screening improve AHI detection following a negative rapid test and is it cost-effective?

METHODS

- Used an Excel-based mathematical model to estimate HIV transmissions averted and costs per quality-adjusted life year (QALYS) over 1 year.
- Outcomes = Incremental cost per QALY for adding 4G screening to rapid-negative specimens compared to rapid testing alone.

KEY ASSUMPTIONS

- Persons detected with 4G will be diagnosed 1 year later without 4G
- No clinical benefits to index case for early detection period.

Key Model Inputs	Value (range)	Source
Annual HIV Transmission (MSM)		
Acute unaware; aware	1.146; 0.330	CDC unpublished data
Non-acute unaware; aware	0.1212; 0.068	CDC unpublished data
Non-acute aware, suppressed	0.008	CDC unpublished data
Transmission reduction, suppressed	90% (70-99%)	Cohen, 2011
Transmission reduction, aware	53% (25-75%)	Marks, 2006
Proportion viral suppressed	57% (25-75%)	Hall, 2013
Receipt of Results	80 (60-100%)	CDC unpublished data
HIV - Costs: 4G, labor, controls	$11.00	Hutchinson, 2013
HIV + Costs: 4G, Multispot, labor, controls	$58.34	Hutchinson, 2013
Annual Treatment Costs	$14,090	Gebo, 2010
Lifetime HIV Treatment Costs	$402,000	Farnham, 2012

SENSITIVITY ANALYSIS

- Not sensitive to changes in receipt of results or viral suppression.
- Threshold Value, $100,000 per QALY:
  - Reduction in acute positivity to 0.08% from 0.18%.
  - Increase testing cost (HIV -) to $44 from $11.

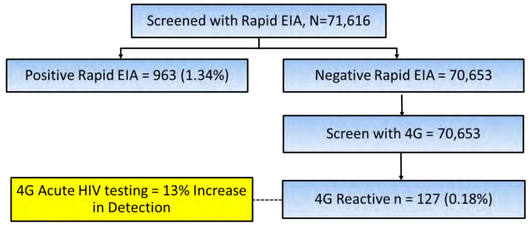
LIMITATIONS

- Did not include benefits of partner services or serosorting.
- Did not include clinical benefits to index case for earlier ART initiation.
- ART costs for averted transmissions represent optimal care.

CONCLUSION

Screening rapid-test negative specimens with a 4G test can be a cost-effective strategy to detect early HIV infection in high risk populations.

STOP Results, Sept 2011 – July 2013



Cost-effectiveness of Adding 4G Screening Following a Negative Rapid Test	
Additional Program Costs	$ 2,016,000†
HIV transmissions averted (acute)	5.2
QALYs saved	23.22
Incremental Cost per QALY‡	Cost-saving

†Includes $785,700 in 4G testing costs and $1,230,000 in annual ART costs in $2011
‡Versus rapid testing alone

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