343 HIV Serology Following Treatment Interruption in Very Early Treated People

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ABSTRACT

Antiretroviral therapy (ART) initiated during acute HIV infection (AHI) may result in HIV seronegativity. Little is known about the serologic profile following ART treatment interruption (ATI) in such individuals. Knowledge gained could inform recommendations for HIV diagnostic testing following pre- and post-exposure prophylaxis.

Participants initiating ART and virally suppressed during Fiebig (F)-I or F-III stage of AHI were enrolled in two ATI studies and resumed ART with VL > 1000 copies/ml (median duration of ATI was 4.5 weeks). HIV serostatus was determined pre- (median [range]:122.6 wks [5.0-285.1]) and post-ATI; median:5.3 wks [0.4-53.9]), using Avioq HIV Microelisa (AVQ, 2ndG IA), Genscreen HIV-1/2 (GSC, 3rdG IA), Architect HIV Ag/Ab Combo (ARC, 4thG IA), Determine HIV-1/2 (DET, RDT), SD Bioline HIV-1/2 3.0 (BIO, RDT) and Serodia HIV (SRD, RDT), all of which are widely used in Thailand: ARC 35%, DET 62%, BIO 32% and SRD 14% of laboratories (N=264) surveyed.

Participants (N=8) initiating ART during F-I AHI were frequently HIV seronegative pre-ATI by AVQ (88%), followed by ARC, BIO, DET (75%), and GSC and SRD (38%). The frequency of seropositivity following ATI varied for participants (75%-88%) depending on the test (Table 1). One participant was HIV seronegative throughout the study by ARC only while another showed non-reactivity to all tests throughout the study. Eighty % of participants initiating ART during F-III AHI (N=5) were HIV seronegative pre-ATI by BIO and 40% by ARC, AVQ and DET. All participants were seropositive pre-ATI by GSC and SRD. All participants were seropositive post ATI for all tests. Pre-ATI HIV seronegative frequencies ranged from 23%-69% for kits using viral lysate (AVQ, SRD), and 23-77% for kit using Env and Gag (GSC, BIO) as capture AG. Increased HIV seronegative frequencies (62%) pre-ATI were observed with test kits employing HIV Env (gp41) as the detecting AG (ARC, DET). Similar HIV seropositive frequencies following ATI were detected with all tests (85%-92%).

HIV serology may remain negative following early ART initiation, particularly in Fiebig I, with frequencies differing by tests. However, the majority of participants who underwent short ATI became HIV seropositive on almost all tests.

Table 1: Frequency of HIV Seropositivity

	Fiebig I - %Reactivity		Fiebig III - %Reactivity	
Test	Pre-ATI	Post-ATI	Pre-ATI	Post-ATI
ARC	25	75	60	100
GSC	62	88	100	100
AVQ	12	75	60	100
DET	25	88	60	100
BIO	25	75	20	100
SRD	62	88	100	100

CONCLUSION

- HIV seroconversion was observed following ATI using both IA and RDT in participants initiating ART during Fiebig I and Fiebig III AHI
- HIV seronegativity continued up to 6 months post ATI in Fiebig I (12%-25%) by both IA and RDT
- HIV seronegativity was associated with tests using only Env antigen for detecting HIV antibody
- ART initiation in the early stages of AHI impacts HIV serostatus measured by routine clinical assays

BACKGROUND

- Immediate initiation of anti-retroviral therapy (ART) during acute HIV infection (AHI) in RV254 participants results in incomplete HIV serology profiles, and in some instances, HIV seroreversion *(de Souza MS, et al. Clin Infect Dis 2016)*.
- HIV antibody seroconversion and/or seroreversion on Immunoassays (IA) has been described in both pediatric and adult individuals who initiated ART during acute/early HIV infection *(Ananworanich J, et al. AIDS 2014; Hare CB, et al. Clin Infect Dis 2006; Kassutto S, et al. Clin Infect Dis 2005; Payne H, et al, The Lancet 2015)*.

METHOD

Participants initiated ART at
- **Fiebig I (RV411; N=8)**
- **Fiebig III (RV409; N=5)**

Pre-ATI

Antiretroviral Treatment Interruption (ATI); median 4.5 weeks

Post-ATI

Resume ART for 2 consecutive plasma HIV RNA > 1000 copies/mL

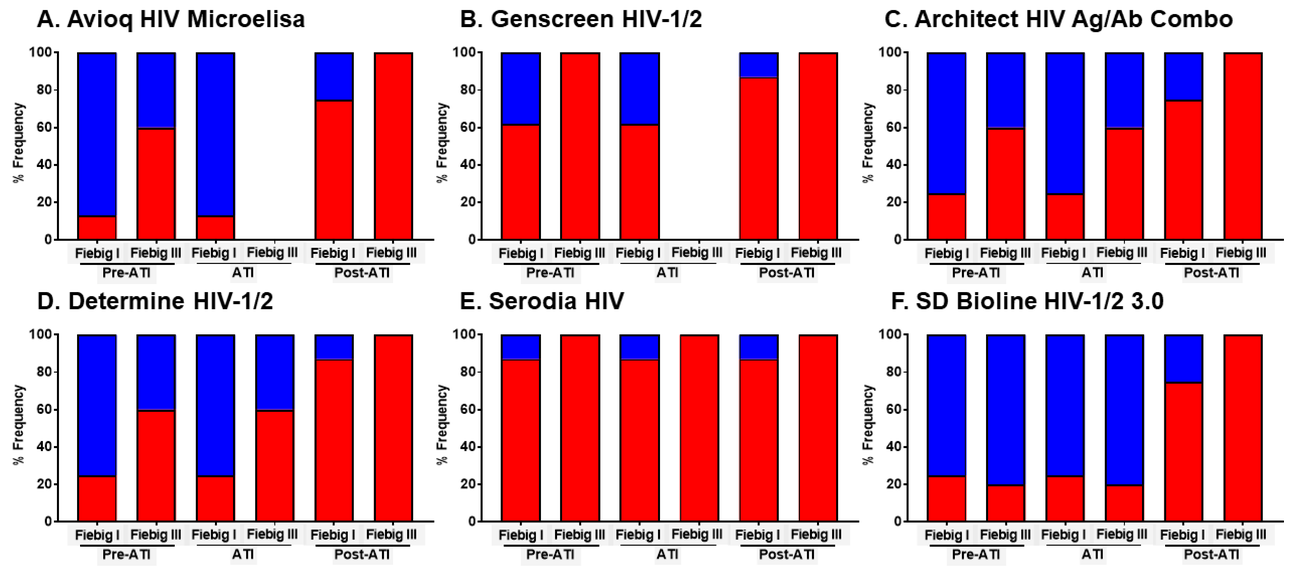
HIV Serology Testing

1. **Immunoassay (IA)**
   a. **Avioq HIV Microelisa (AVQ)**
   b. **Genscreen HIV-1/2 (GSC)**
   c. **Architect HIV Ag/Ab Combo (ARC)**
2. **Rapid Diagnostic Test (RDT)**
   a. **Determine HIV-1/2 (DET)**
   b. **Serodia HIV (SRD)**
   c. **SD Bioline HIV-1/2 3.0 (BIO)**

RESULTS

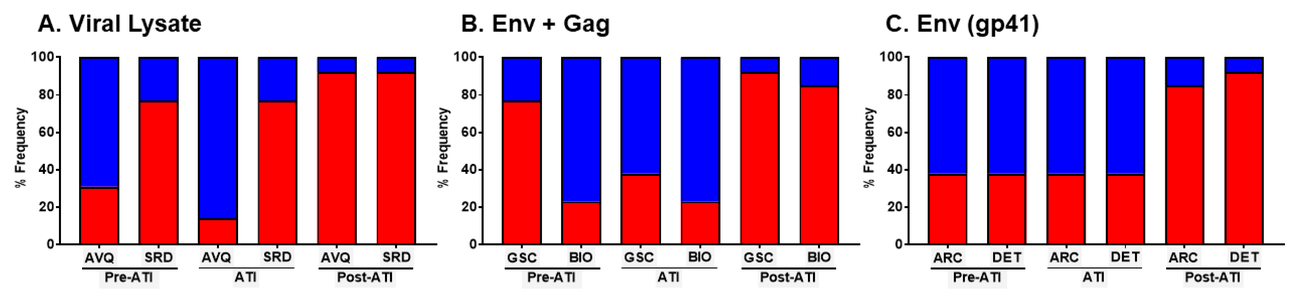
Non-Reactive Reactive

HIV seronegative frequencies following ART initiation in acute HIV infection (AHI) varied depending on the test type



Remark: Avioq HIV Microelisa and Genscreen HIV-1/2 were not done during ATI timepoint in participants initiating ART at Fiebig III

Test kits employing different HIV antigens show different frequencies of seroreactivity pre- and during ATI, but not post ART resumption



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