

## PE53 LB

### CD4/CD8 ratio at ART initiation as a predictor of viral rebound following interruption of ART initiated in primary HIV infection

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**Background:** Virological post-treatment control (PTC) has been described among individuals commencing ART in primary HIV infection (PHI). Factors which predict likelihood of PTC are required to inform treatment interruption (TI) studies. Preserved immunological function plays a key role in viral control amongst Elite controllers. We investigated the association between CD4/CD8 at ART initiation with time to rebound amongst individuals initiating short-term ART during PHI.

**Methods:** Time to event analyses and Cox proportional hazards models were used to investigate effect of CD4/CD8 at time of ART initiation and TI with time from ART interruption to virological rebound (>400c/mL), censoring at ART re-initiation, and adjusting for: sex, age, exposure group, enrolment site, HIV Viral Load (VL) at ART initiation, time from seroconversion to ART initiation, and ART duration. Data from two cohorts of treated HIV-seroconverters; the UKR HIV Seroconverters and the SPARTAC RCT, were used.

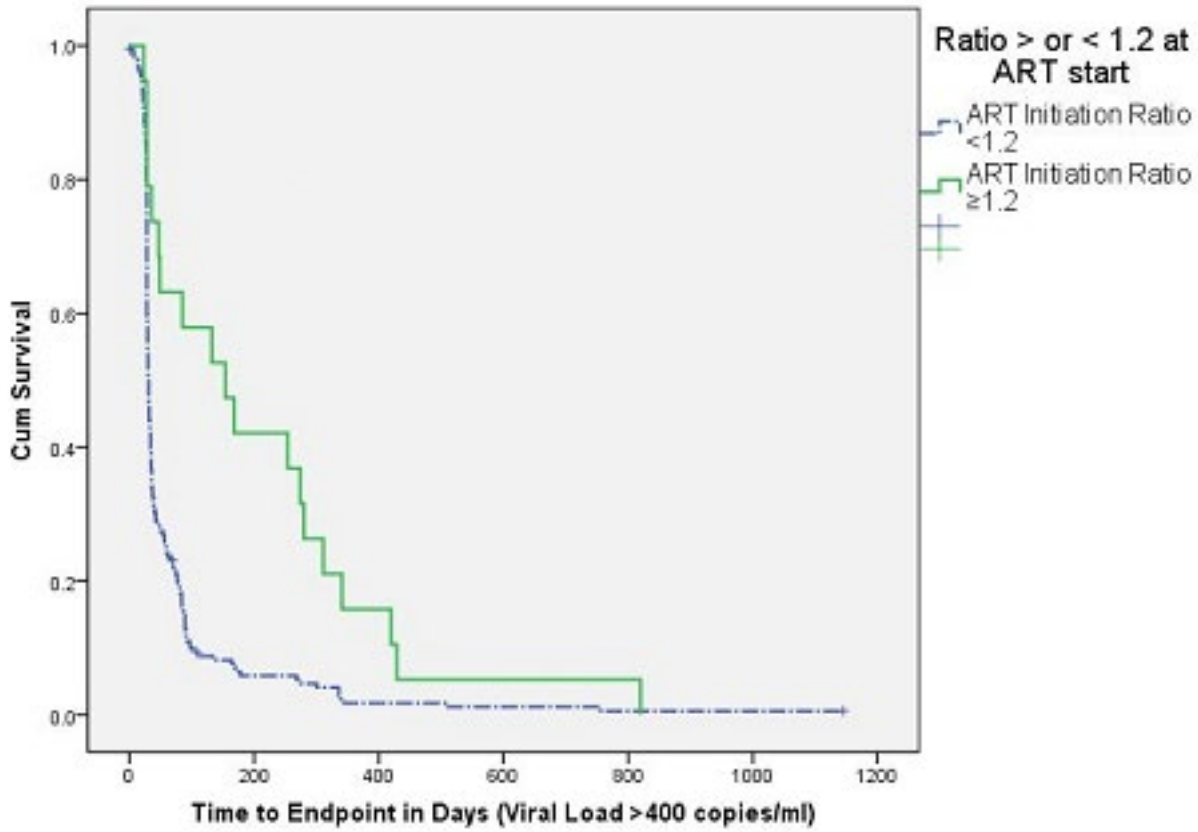
**Results:** Of 206 individuals, 142 male, median age 34 years, median time from seroconversion to ART initiation 84 (IQR 57-106) days and median ART duration 3.37 months, 202 (98%) experienced viral rebound. Median (95%CI) time to rebound was 31 (28,71) days, with 4 not experiencing a rebound by 3 years.

In unadjusted analyses, higher ART initiation CD4/CD8 (HR [95% CI] =0.64 [0.44, 0.91], p=0.015), HIV VL (HR[95% CI]=1.27 [1.11,1.46] p=0.001) and longer duration of ART (HR [95% CI] =0.97 [0.93, 0.99], p=0.032) were associated with longer time to rebound. TI CD4/CD8 was not. On adjusting for all other factors, there was no evidence of an independent effect of CD4/CD8 at ART initiation (p=0.39), although some evidence that those with a ratio  $\geq 1.2$  (HR [95%CI] = 0.59 [0.345,0.997],p=0.049), compared with  $< 1.2$ , experienced longer time to rebound. Higher VL at time of starting ART (p=0.017), and longer duration of ART (p=0.045) were associated with longer time to rebound.

**Conclusions:** A CD4/CD8 ratio  $\geq 1.2$  at ART initiation may be predictive of post treatment control. Initiation of ART before disruption of immune homeostasis below a threshold may be important in controlling viraemia during ART cessation; CD4/CD8 ratio warrants further evaluation in cohorts with longer duration of treatment where PTC would be anticipated.

Factor	HR	95.0% CI Lower	95.0% CI Upper	p value
<b>Unadjusted Analyses</b>				
Sex	.760	.556	1.039	.085
Time from seroconversion to ART Initiation	.999	.998	1.000	.189
ART Initiation HIV Viral Load (Log cpm)	1.274	1.111	1.460	<b>.001</b>
CD4/CD8 at ART initiation	.636	.443	.914	<b>.015</b>
CD4/CD8 at Treatment Interruption	.764	.579	1.009	.058
Duration on ART (months)	0.965	.933	.997	<b>.032</b>
Year of HIV Seroconversion	.965	.897	1.039	.347
CD4 ≥ or < 900 at TI	1.141	.831	1.567	.415
Age Category	.964	.856	1.085	.539
Exposure Category MSM	2.769	.680	11.278	.155
Enrolment from an African site	1.416	1.013	1.980	<b>.042</b>
CD4/CD8 at TI ≥ 1.2 compared to <1.2	.721	.534	.975	<b>.034</b>
ART initiation CD4/CD8 ≥ 1.2 or <1.2	.430	.265	.697	<b>.001</b>
<b>Multivariable Analyses</b>				
Sex	.721	.265	1.96	.522
Enrolment from an African site	1.625	.802	3.292	.178
Time from seroconversion to ART Initiation	1.000	.999	1.001	.601
ART Initiation HIV Viral Load (Log cpm)	1.221	1.036	1.439	<b>.017</b>
Duration on ART (months)	.962	.927	.999	<b>.045</b>
ART initiation CD4/CD8 ≥ 1.2 or <1.2*	.586	.345	.997	<b>.049</b>
Multivariable model adjusted for sex, age, exposure, enrolment from an African site, time from seroconversion to ART Initiation, HIV Viral Load (Log), Duration on ART, and Time from both viral load and CD4/CD8 reading to ART Initiation				
*Model for CD4/CD8 ratio as a continuous variable was not significant, a poorer model fit (as measured by AIC) and is not shown				
p<.05 shown in bold				

[Cox Model: Factors associated with rebound ]



[Time To Rebound - CD4/CD8  $\geq$  1.2 and <1.2 ]