

# Higher rates of hepatitis B surface antigen (HBsAg) loss in the first 12 months of antiretroviral therapy (ART) in the setting of HIV-HBV co-infection



A joint venture between The University of Melbourne and The Royal Melbourne Hospital

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Poster #4

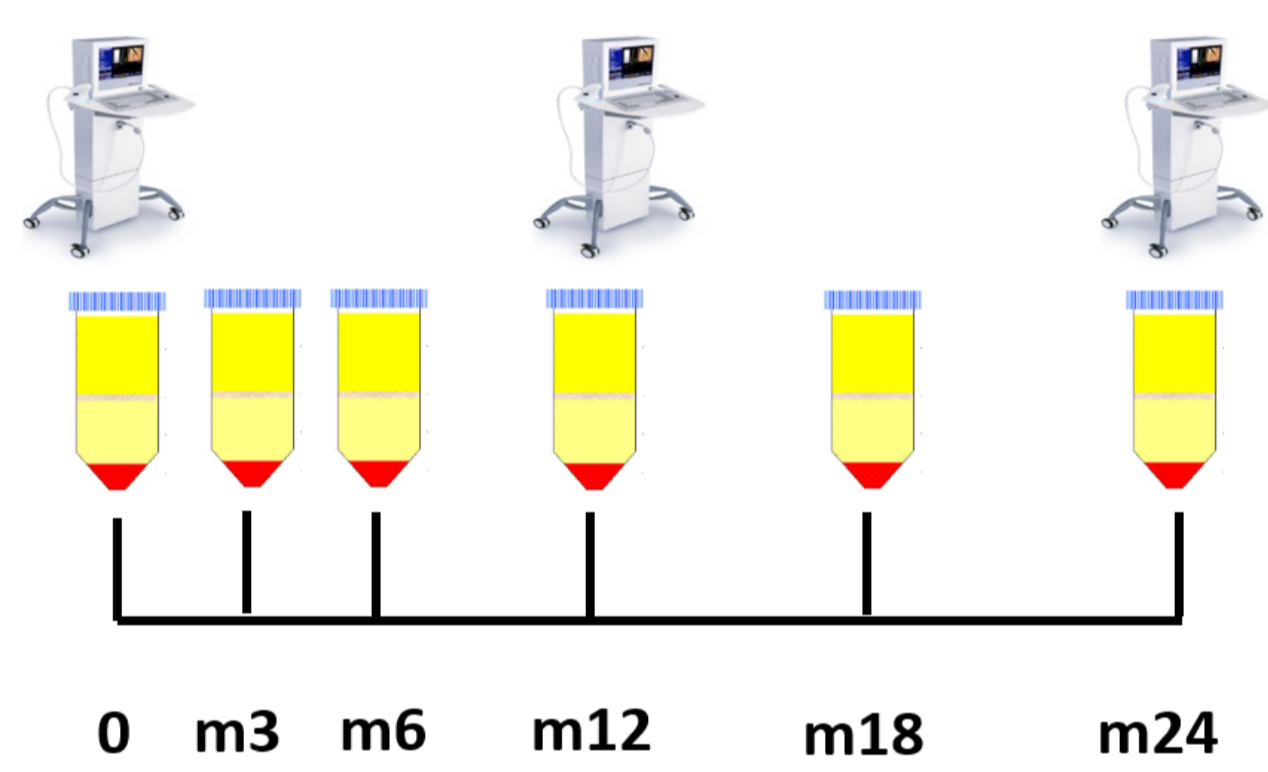
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## Background

- An effective therapeutic strategy for HBV cure remains an urgent unmet need
- Higher rates of HBsAg loss have been observed in people living with HIV-HBV co-infection who start HBV active antiretroviral therapy (ART) compared to those living with HBV infection alone who start antiviral HBV therapy, making HIV-HBV co-infection an ideal setting to investigate HBsAg loss
- We aimed to define the incidence and predictors of HBsAg loss following HBV-active ART in HIV-HBV co-infection in Asia.

## Study design

- Prospective, observational cohort study "The COMMIT Study"
- n=97: 94 recruited in Thailand & 3 recruited in Malaysia
- Inclusion criteria: adults (18 yrs+) living with HIV and HBV, defined clinically by:
  - HIV Ab+ve
  - Chronic HBV (2 positive HBsAg and/or HBV DNA results at least 6 months apart)
  - About to commence HBV-active ART
- Study visits at baseline (BL), months 3 & 6, then 6-monthly to m24



Co-infection in Malaysia, India & Thailand



Recruitment sites:  
• Bangkok  
• Kuala Lumpur  
• Chennai

## Methods

### At each study visit:

- Clinical data
- Physical exam
- Laboratory parameters
- Annual Liver stiffness assessment (Fibroscan) (BL, M12, M24)
- Blood sample collection (Plasma each visit, PBMCs stored annually)



## Cohort snapshot at study entry

Characteristic	Number (% or IQR)
Age (years)	32 (26, 39)
Site of recruitment, Thailand/Malaysia, n (%)	94 (96.9) / 3 (3.1)
Sex, M/F, n (%)	89 (91.8) / 8 (8.2)
Duration known HIV positive, <b>days</b>	10 (6, 16)
HBV DNA (log <sub>10</sub> IU/ml)	6.67 (2.97, 7.98)
HBV DNA positive, n (%)	88.0 (90.7)
HIV RNA (log <sub>10</sub> copies/ml)	4.47 (3.92, 4.97)
HIV RNA positive, n (%)	88.0 (90.7)
Quantitative (q) HBsAg (log <sub>10</sub> IU/ml)	4.12 (3.31, 4.92)
HBeAg positive, n (%)	61 (62.9)
Transient elastography, (kPa)	5.7 (4.6, 7.2)
CD4 T cells, total (cells/mm <sup>3</sup> )	240 (121, 349.5)
Alanine aminotransferase (ALT), U/L	31.5 (20.0, 53.5)
Aspartate aminotransferase (AST), U/L	27.5 (23.8, 46.5)
Alkaline phosphatase (ALP), U/L	77.0 (61.0, 92.0)
Body mass index (BMI)	21.1 (19.2, 23.1)

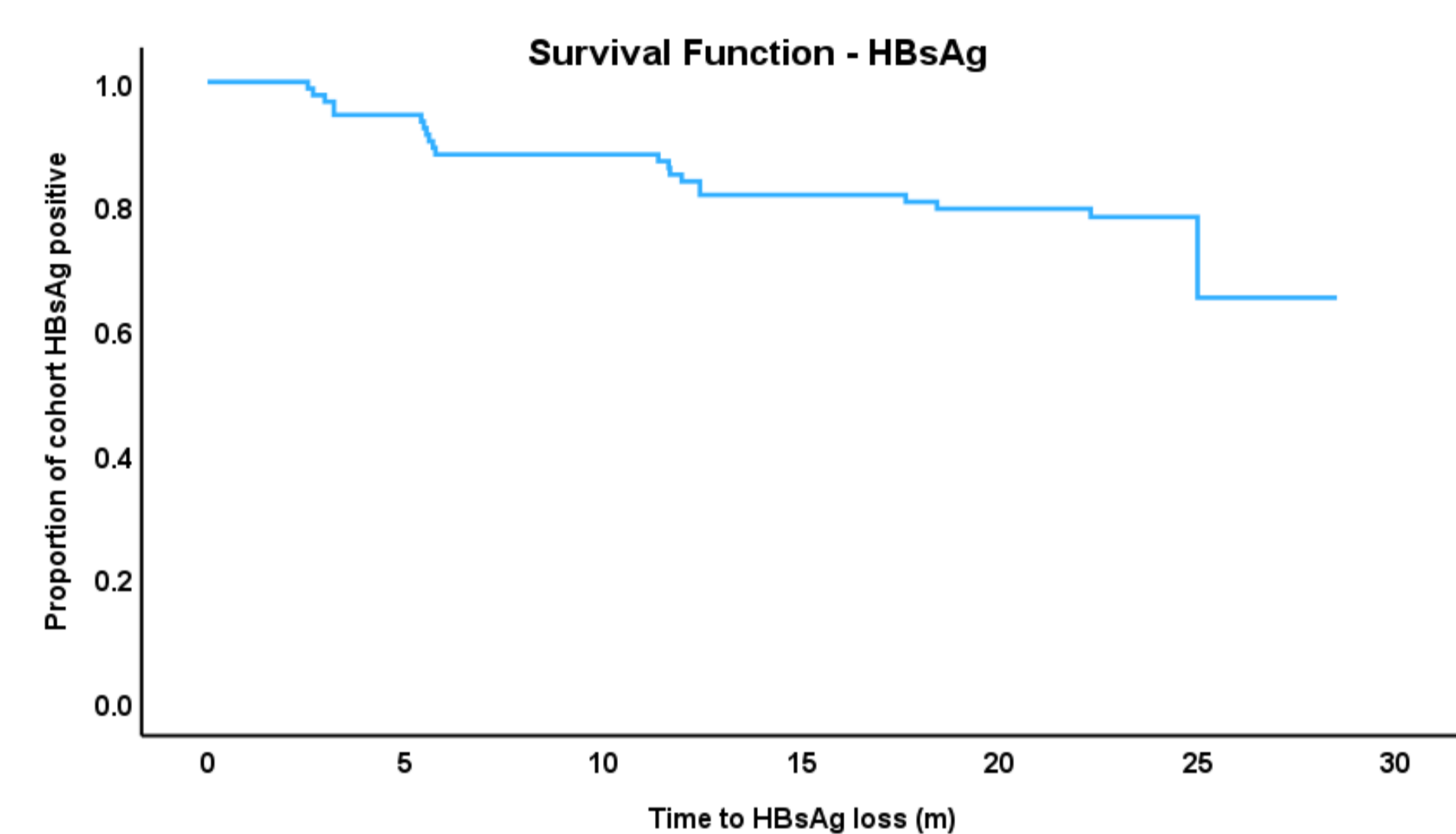
Median (IQR), unless otherwise stated

- 10 individuals with F4 TE results (>9.4kPa)
- 18 individuals with BL CD4<100 cells/mm<sup>3</sup>

## Changes in HBsAg

	End of study
HBsAg loss, n (%)	21 (21.6)
HBsAg seroconversion, n (%)	14 (14.4) – total cohort; 14 (66.7) – those with HBsAg loss

- Most individuals (81%) lost HBsAg by the month 12 study visit
- Median time to HBsAg loss was 5.8 months



Kaplan-Meier curve showing time (months) in follow-up to HBsAg loss

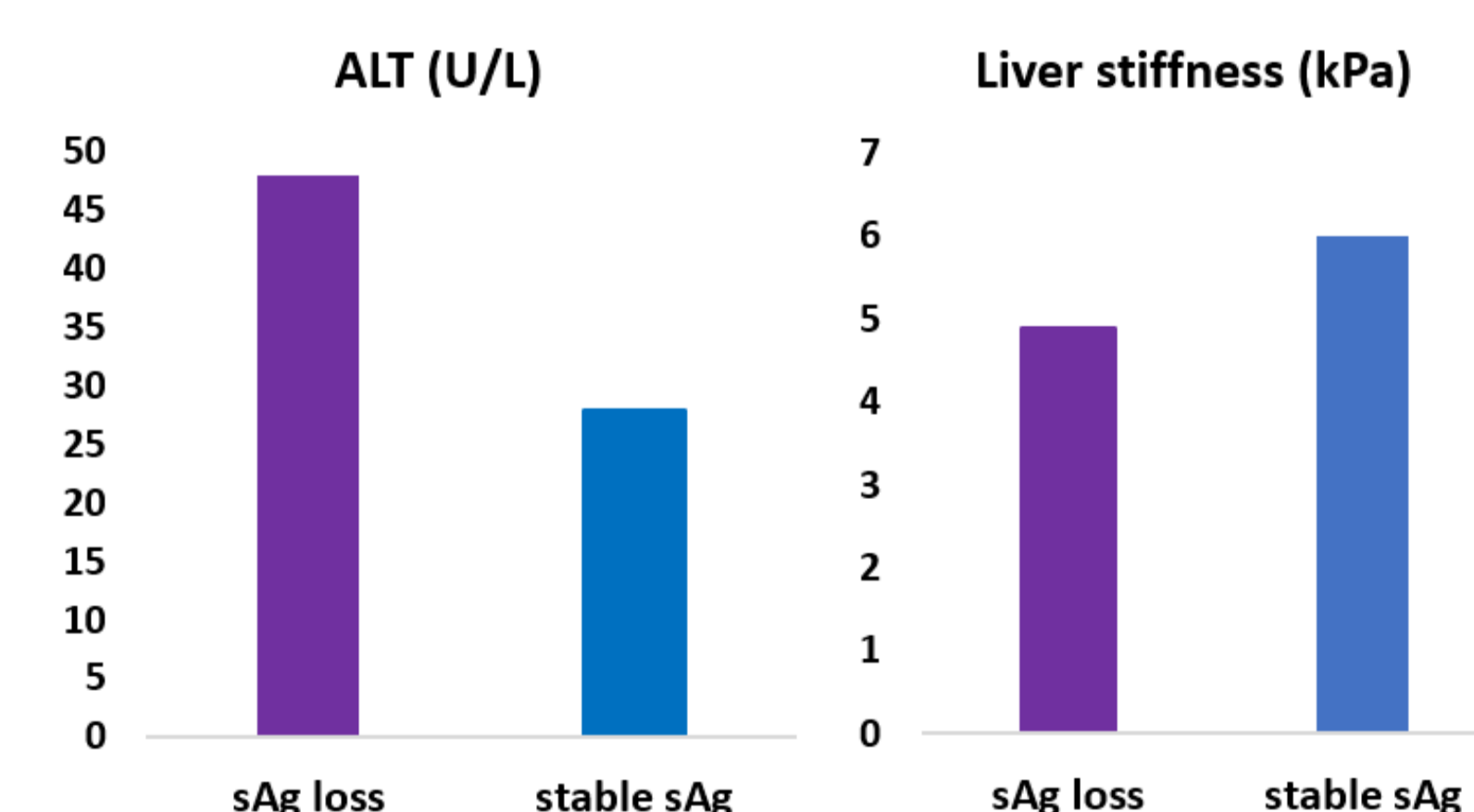
## Changes in HBeAg

	End of study
HBeAg loss, n (%)	22 (22.7) total cohort 22 (36.1) of HBeAg+ve at BL
HBeAg seroconversion, n (%)	15 (15.5) total cohort 15 (24.6) of HBeAg+ve at BL

- Most individuals (63.6%) lost HBeAg by the month 12 study visit
- Median time to HBeAg loss was 12.0 months

## Associations with HBsAg loss

Factor	p value	Median value	
		sAg loss	sAg stable
ALT (IU/ml)	<b>0.005</b>	48	28
Liver fibrosis (TE, kPa)	<b>0.001</b>	4.9	5.9



- Univariate associations between BL characteristics & HBsAg loss were examined using the Mann-Whitney or Chi-square tests
- Higher baseline ALT and lower liver stiffness were both significantly associated with HBsAg loss

## Conclusions

- High rates of HBsAg loss occur in people living with HIV & HBV commencing ART
- Elevated ALT was associated with HBsAg loss
- The high rates of HBsAg loss are likely associated with immune reconstitution given that HBsAg loss was far more common in the first year of starting HBV-active ART
- We are currently exploring potential mechanisms for HBsAg loss in this cohort, including HBsAg epitope profiles, development of neutralising anti-HBs, gene expression in B cells and B cell immune activation