

# HBsAg quantification in clinical practice

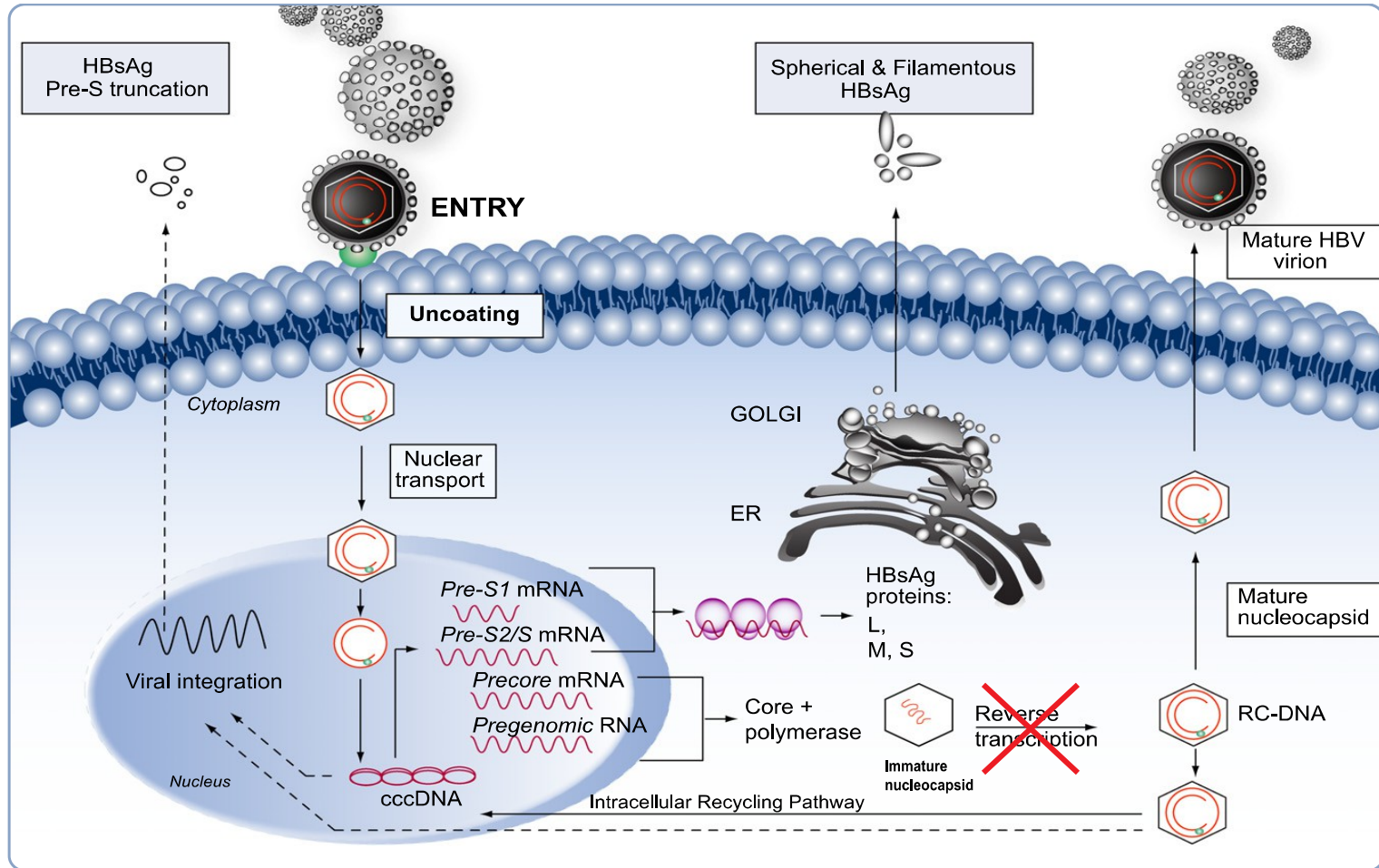
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Laurent du Var, France

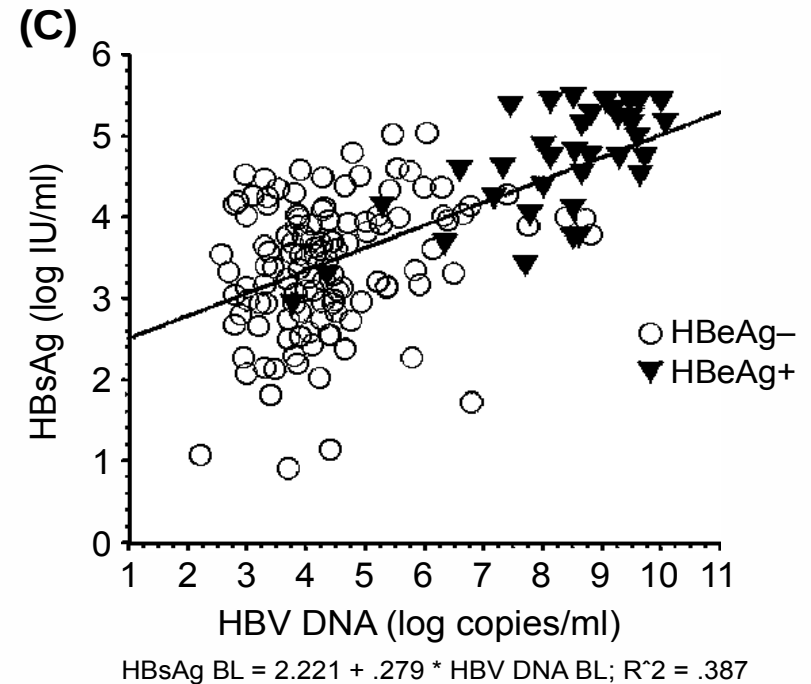
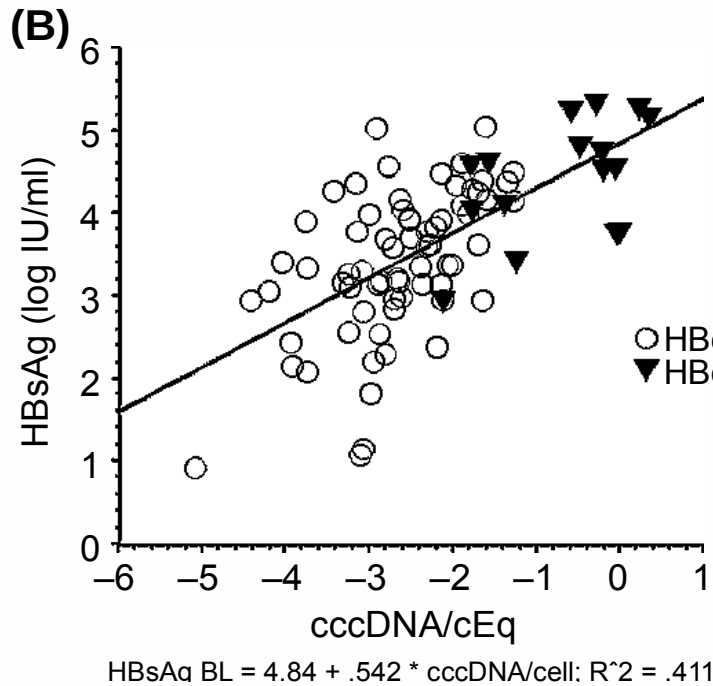
# Disclosure (A. Tran)

- BMS
- Gilead
- Merck
- Abbvie
- Janssen

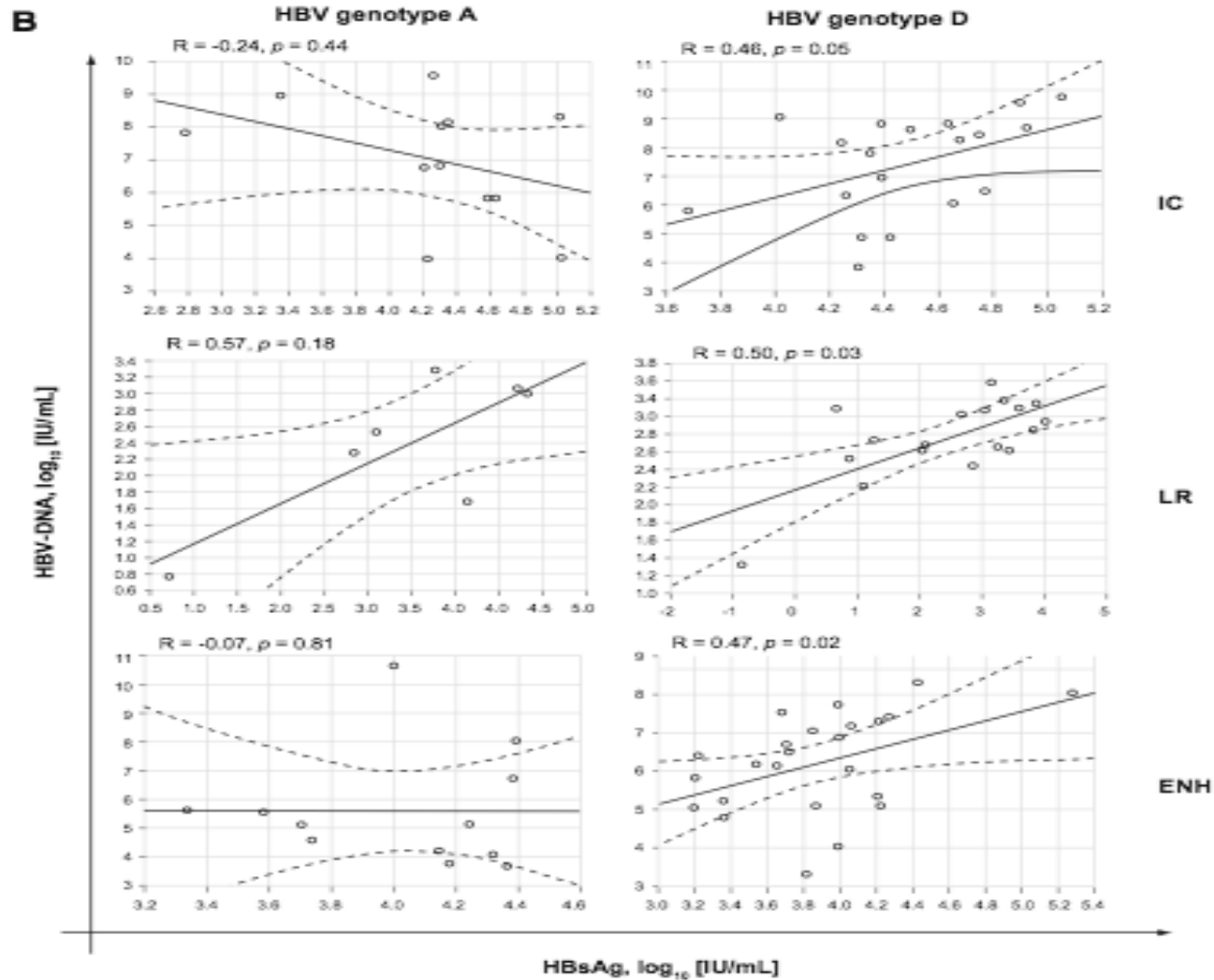
# HBV lifecycle



# Correlation between qHBsAg, cccDNA and HBV DNA

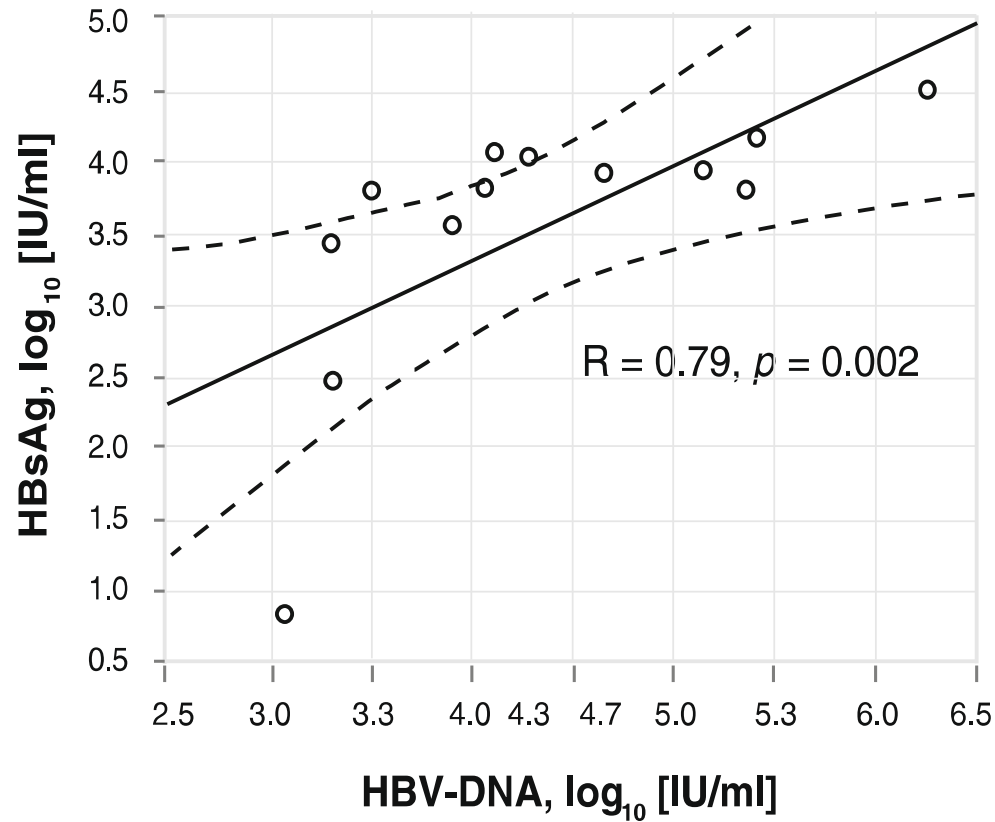


# qHBsAg and genotypes A and D



# qHBsAg and HBV DNA in acute hepatitis B

**D**



# qHBsAg in clinical practice

- Combined with HBV DNA
- Chronic Hepatitis B
  - Natural history (A. TRAN)
  - Treatment (D. Ouzan)

# Questions

- Do you measure qHBsAg in complement of HBV DNA in routine (follow up)?
  - Yes
  - No



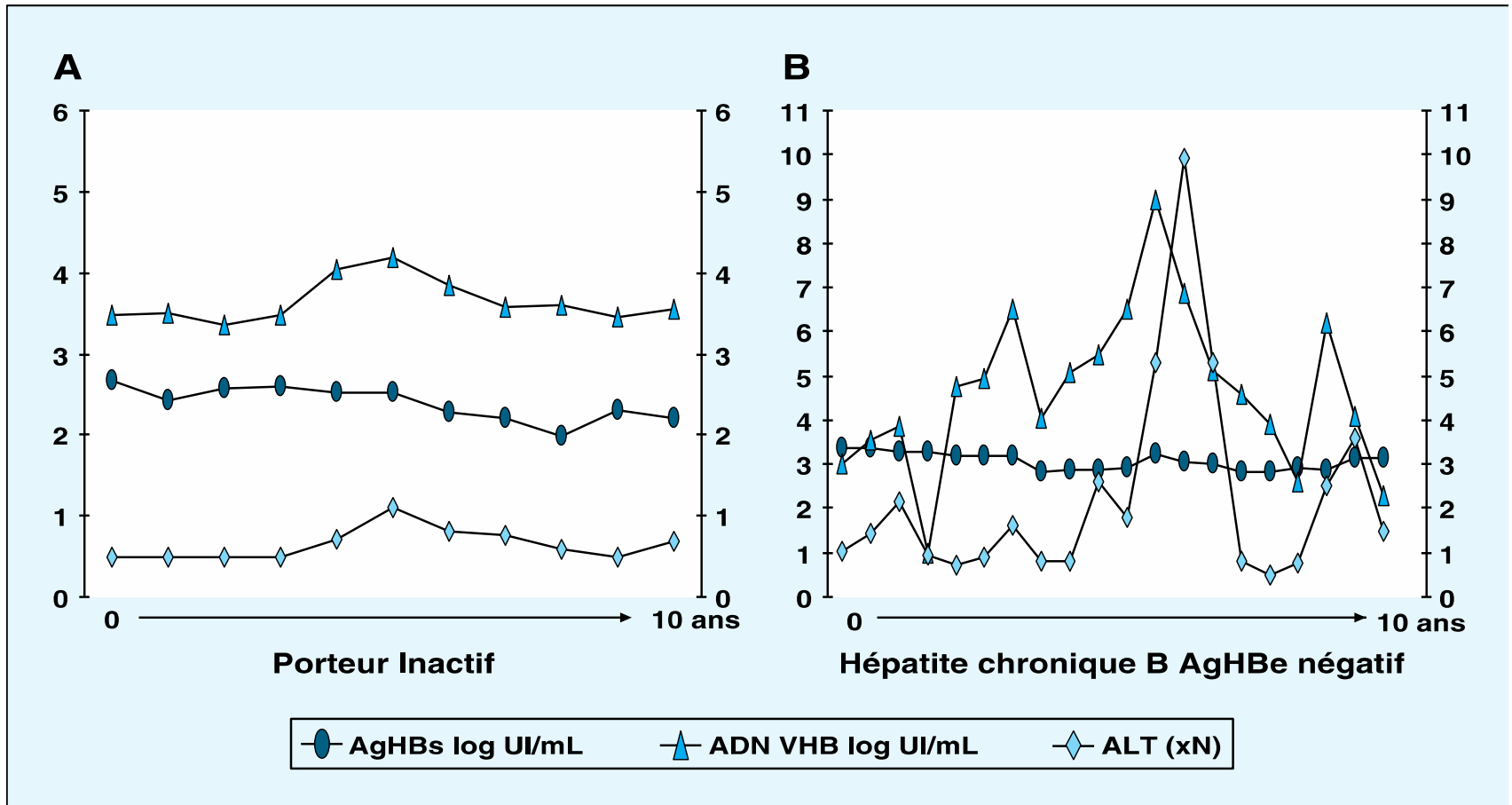
# Case report

- 32 yrs old
- Female
- Caucasian
- No familial history of liver cancer
- Liver US exam: normal
- ALT 24 UI/L, AST 22 UI/L
- Platelet 250 000/mm<sup>3</sup>
- HBV DNA < 20 UI/mL
- e negative
- qHBsAg 45 UI/mL

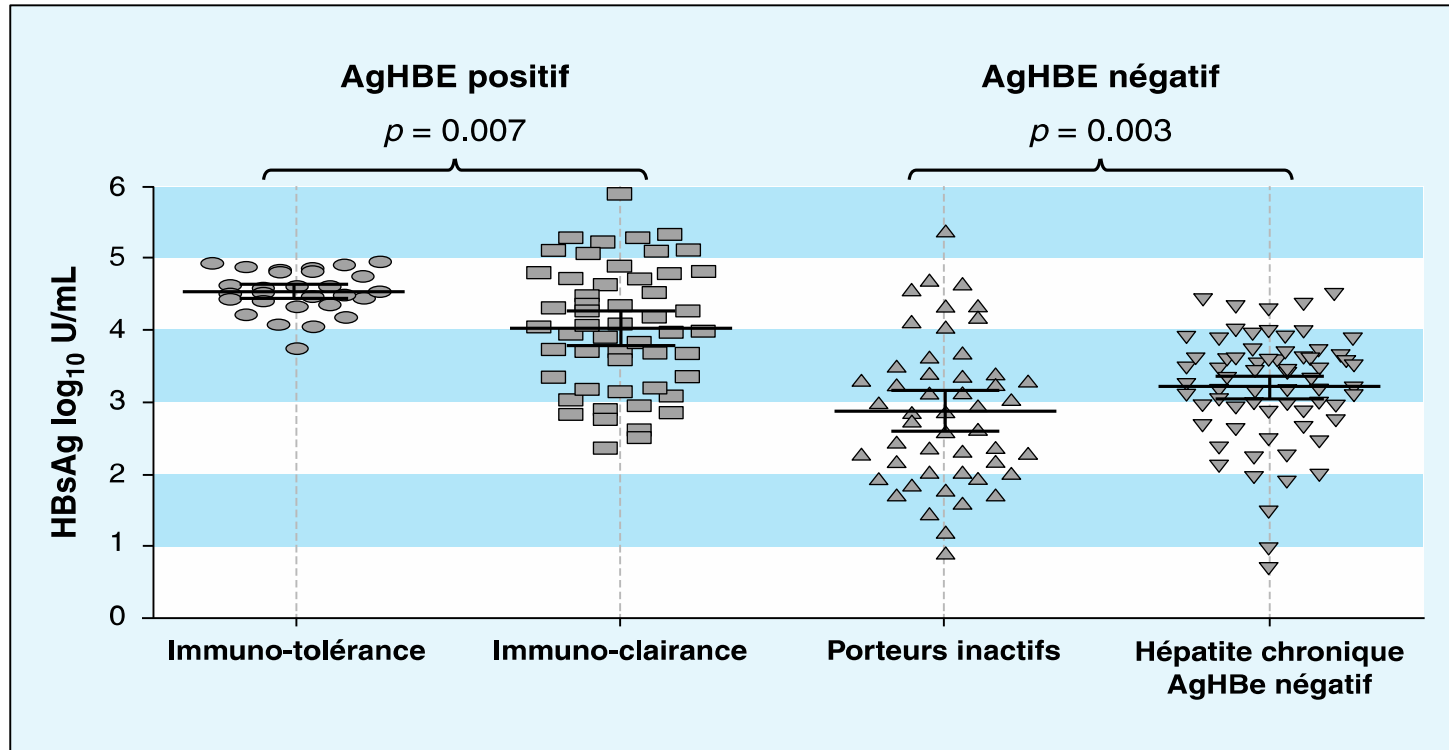
# The adding value of qHBsAg in natural history

- Prediction of inactive carrier
- Prediction of HBs loss
- Prediction of liver fibrosis and cellular hepatocarcinoma

# Inactive carrier and CAH HBe-



# qHBsAg according to different replicative phases of CHB



## qHBsAg and genotype D inactive carriers

Prediction of	Inactive carrier
<i>qHBsAg</i> <i>HBV-DNA</i>	<i>&lt;1000 IU/mL</i> <i>&lt;2000 IU/mL</i>
HBs Carriers (IC)	209 (56)
Diagnostic accuracy	91.1%
Sensibility	91.1%
Specificity	95.4%
PPV	87.9%
NPV	96.7%

# qHBsAg and inactive carriers

Inactive carriers:  $qAgHBs < 1000 \text{ UI/mL}$

Prediction of:

Inactive infection

HBsAg levels  
HBV DNA levels

$<1000 \text{ IU/mL}$  plus  
 $<2000 \text{ IU/mL}$

Patients whose disease is 'truly' inactive and not about to reactivate into active disease and do NOT require treatment

Confirmed in 3 independent European cohorts

Brunetto  
2010

N= 209  
genotype D

PPV  
87.9%

Manesis  
2010

N=242

PPV  
89.7%

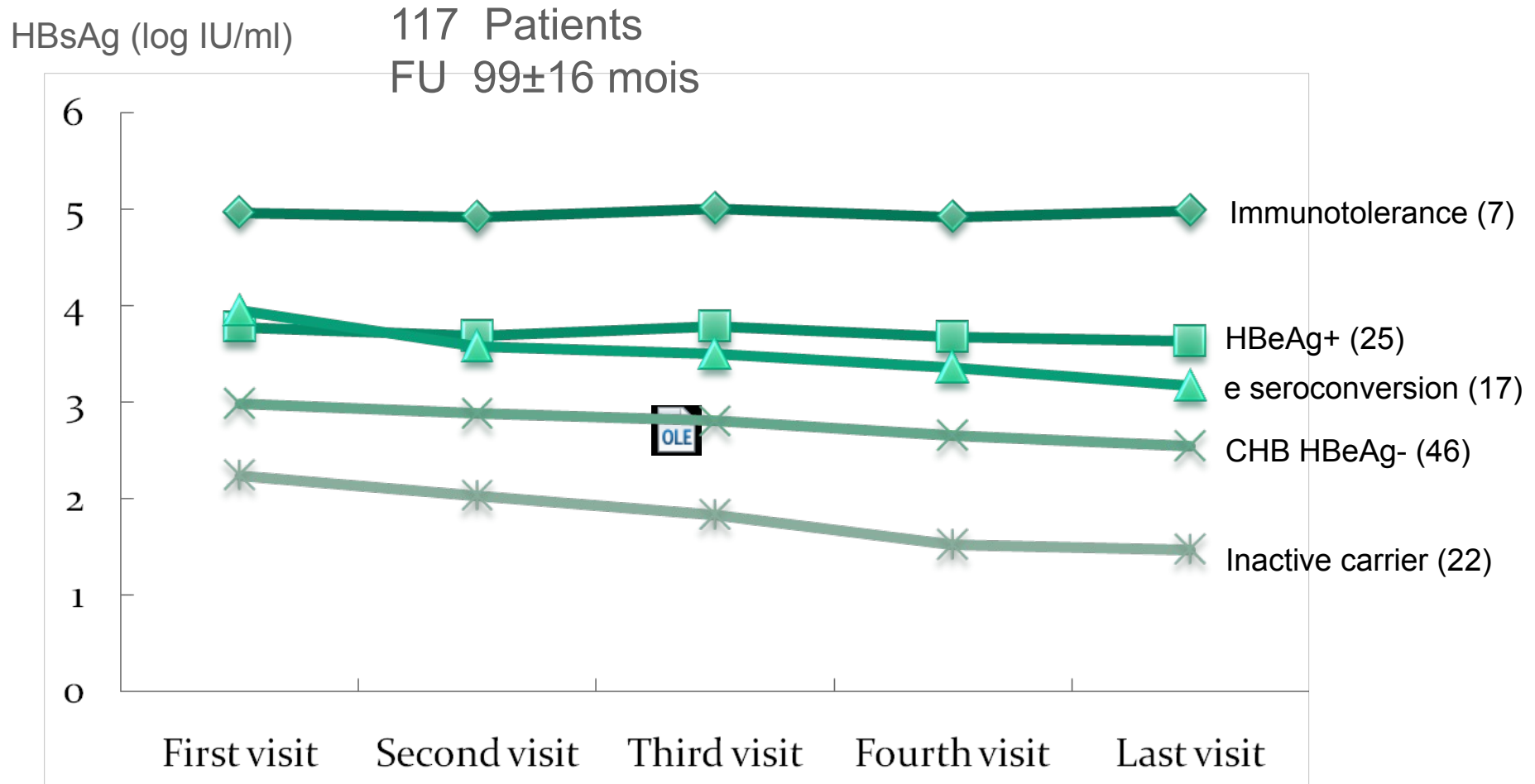
Martinot-Peignoux  
2011

N= 165  
genotypes A-E

PPV  
90%

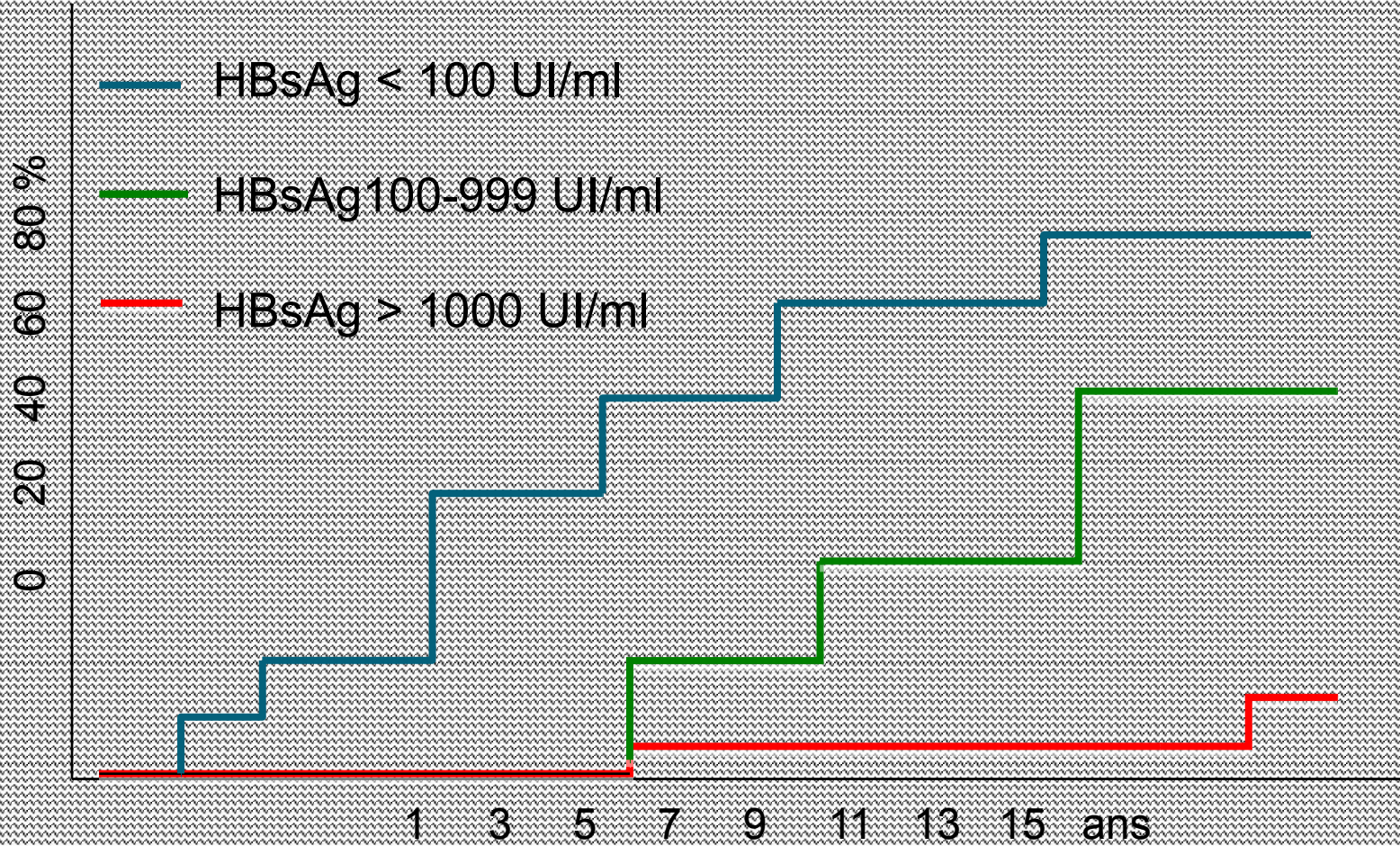
PPV = positive predictive value for inactive disease

# Long term follow up of qHBsAg



# qHBsAg can predict the loss of HBsAg

Incidence of spontaneous loss of HBsAg





## HBsAg seroclearance stratified by HBV DNA levels in Hbe- patients infected by genotype B and C

qHBsAg (IU/mL)	HBV DNA* ≥ 2000 UI/mL (n=837)	HBV DNA* Detectable-1999 UI/mL (n=935)	HBV DNA* Undetectable (n=719)
≥ 1000	1	1	1
100-999	1.84 (1.04-3.25)	4.26 (2.49-7.28)	10.22 (3.62-28.86)
<100	6.04 (3.23-11.31)	8.88 (5.30-14.89)	38.93 (14.47-104.73)

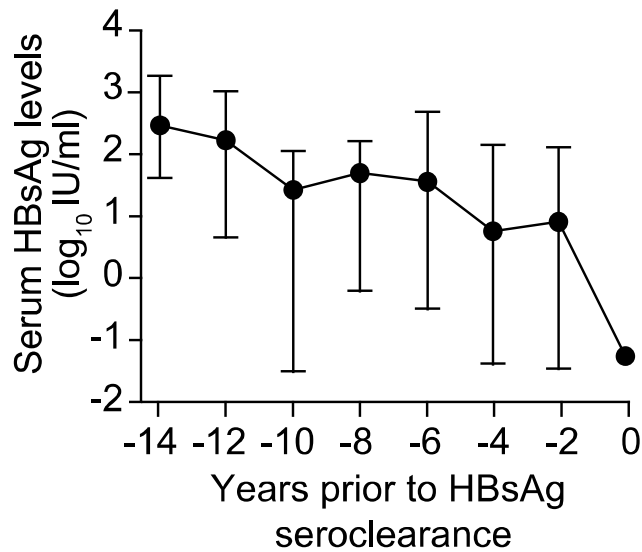
\*adjusted rate ratio (95% CI)

# Changes in qHBsAg prior to HBsAg seroclearance

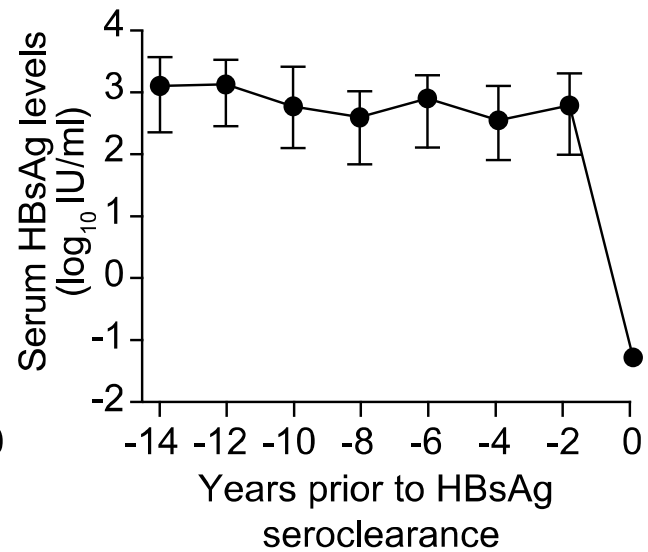
Undetectable HBV DNA

Detectable HBV DNA

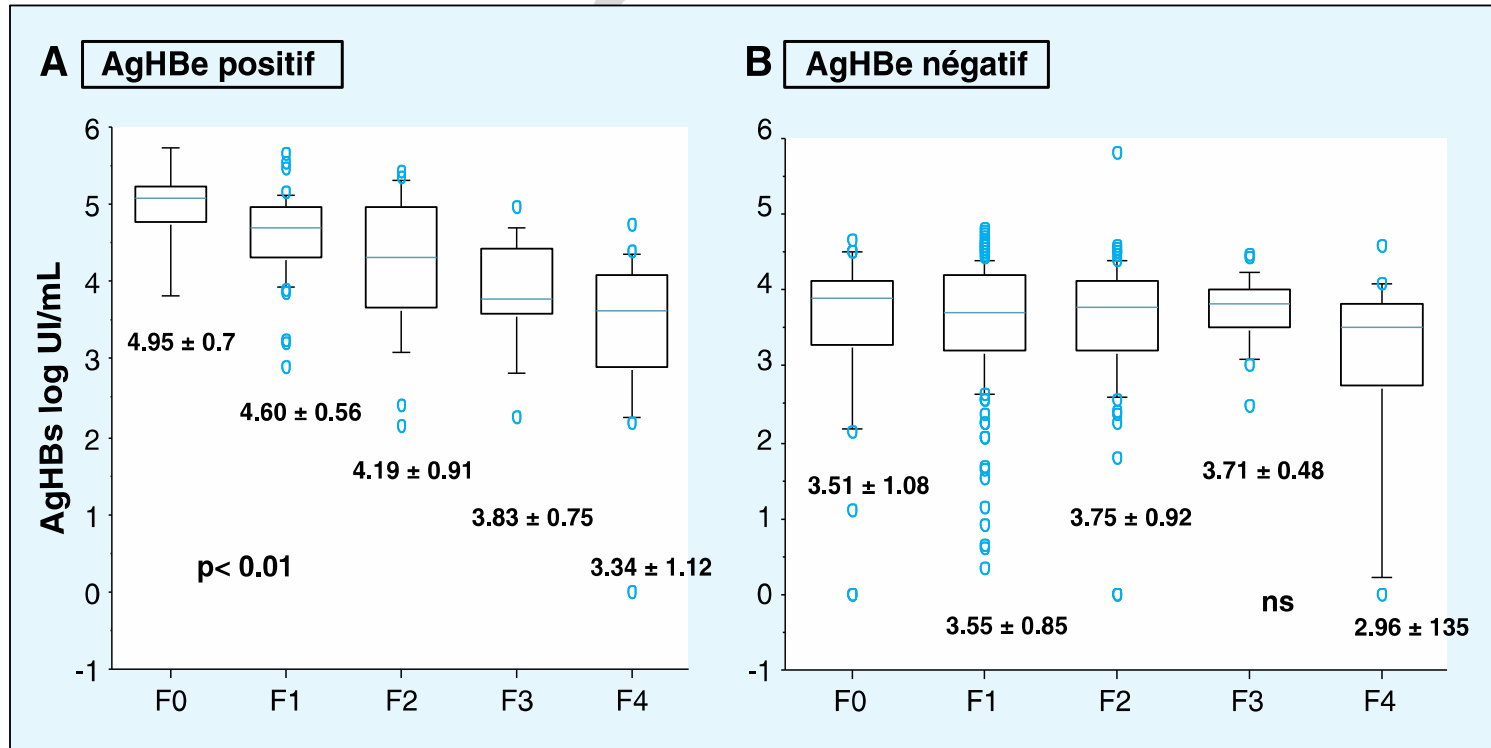
**A** ● Median (25<sup>th</sup>, 75<sup>th</sup> percentile)



**B** ● Median (25<sup>th</sup>, 75<sup>th</sup> percentile)

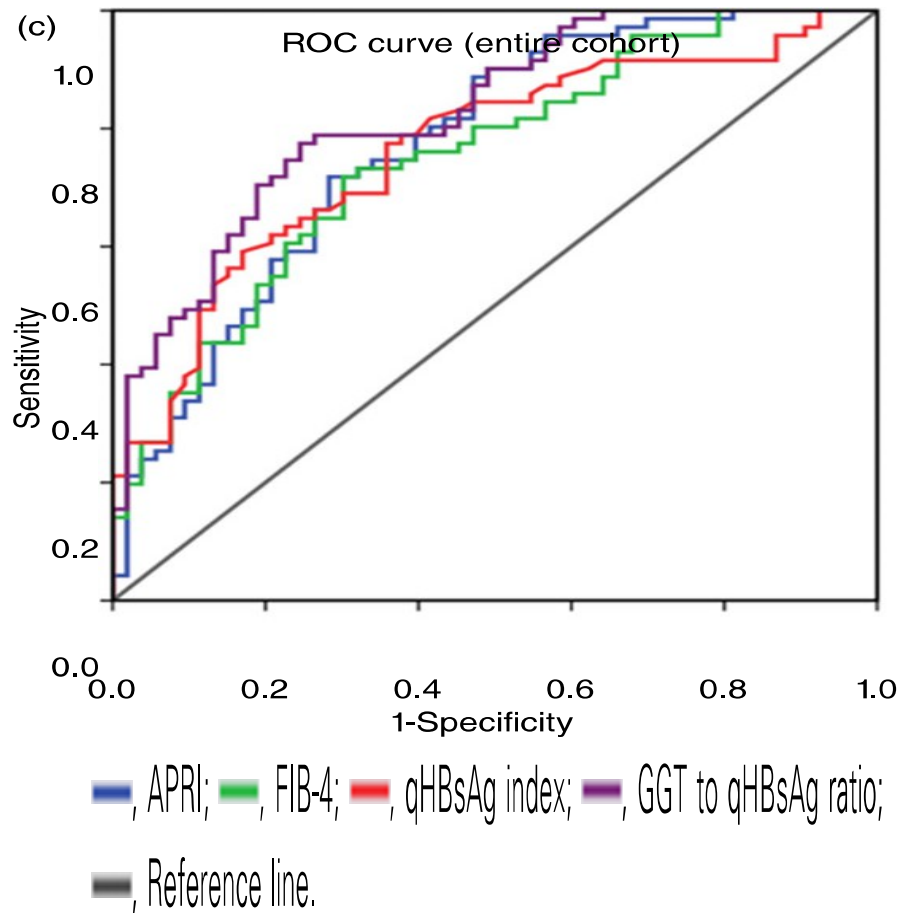


# qHBsAG according to the fibrosis severity



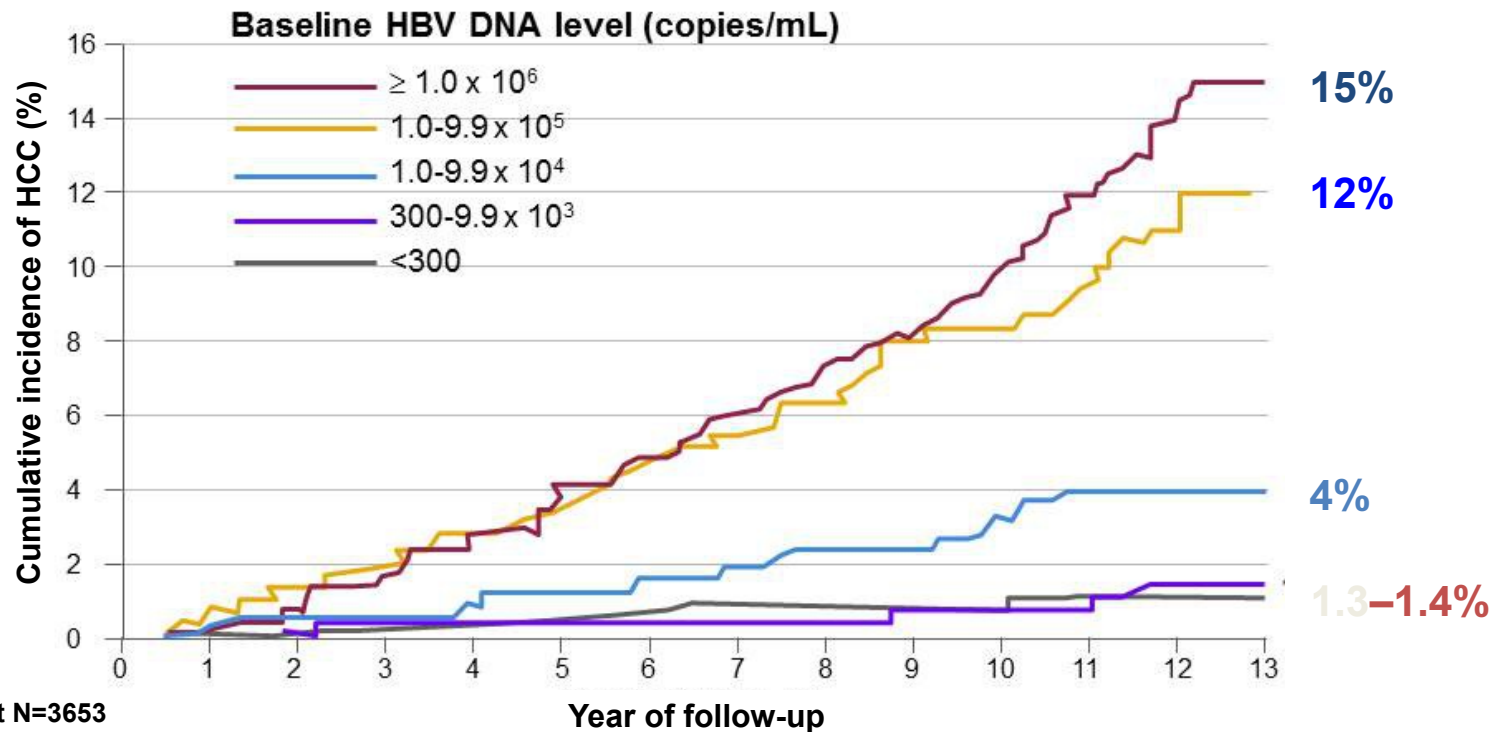
qHBsAG 3.85 log IU (gen B or C) : NPV 91%,  $\leq$  F1 -  $\rightarrow$  F1

# Ratio GGT to qHBsAg to predict significant fibrosis among e positive patients



# HBV DNA an independent risk factor for HCC and cirrhosis : REVEAL study

- HBV DNA level was a strong predictor of HCC<sup>1</sup> and cirrhosis<sup>2</sup>, independent of HBeAg status and serum ALT



Patient age distribution: 30–39 years: 33%; 40–49 years: 28%; 50–59 years: 29%; 60 years: 10%

# Incidence of HCC and qHBsAg in HBe- patients with low viral load (< 2000 IU/mL)

0 2 4 6 8 10 12 14 16 18 20

Years of follow-up

Adj. HR 13.7 (95%CI 4.8-39.3)

Number at risk

Serum HBsAg levels at baseline (IU/mL)

	0	2	4	6	8	10	12	14	16	18	20
<1000	585	585	585	584	578	536	418	306	180	108	72
≥1000	483	483	483	477	469	437	364	260	177	122	82

