

Interaction models for (ln) CMVgB antibody over time

Variable	Time term 1	Time term 2	Covariate	Interaction Time term 1	Interaction Time term 2	Constant (95% CI) p-value
	W Coefficient (95% CI) p-value	Z Coefficient (95% CI) p-value	S Coefficient (95% CI) p-value	P Coefficient (95% CI) p-value	Q Coefficient (95% CI) p-value	
none	0.47 (0.07, 0.88) p=0.02	6.64 (4.32, 8.96) p<0.0001				11.6 (11.3,12.0) p<0.0001
(ln) HIVgp41 Ab	1.28 (0.50, 2.07) p=0.002	0.52 (-0.19, 0.84) p=0.002	-0.02 (0.26,0.22) p=0.88	-0.09 (-0.16, -0.03) p=0.006	-0.04 (-0.06, -0.01) p=0.007	12.5 (9.6,15.3) p<0.0001
(ln) IgG	-0.28 (-0.64, 0.07) p=0.11	0.11 (-0.26, 0.11) p=0.18	0.56 (0.08,1.03) p=0.02	0.14 (0.01, 0.27) p=0.02	0.05 (0.002, 0.11) p=0.042	10.7 (9.4,11.9) p<0.0001
Age	0.15 (0.09, 0.21) p<0.0001	0.06 (0.04, 0.09) p<0.0001	-0.01 (-0.03, 0.02) p=0.51			12.3 (12,12.5) p<0.0001
(sqrt) CD4 T-cell	0.23 (0.15,0.31) p<0.0001	0.094 (0.62,0.13) p<0.0001	0.018 (0.015, 0.088) p=0.006			12.10 (11.9,12.3) p<0.0001
sCD14	0.15 (0.10,0.21) p<0.0001	0.06 (0.04,0.09) p<0.0001	8.2×10^{-6} $(-1 \times 10^{-3}, 2 \times 10^3)$ p=0.93			12.2 (12.0,12.5) p<0.0001
(ln) IE-1 Ab	0.15 (0.10,0.19) p<0.0001	0.06 (0.04,0.08) p<0.0001	0.24 (0.07, 0.41) p=0.005			12.2 (11.9,12.5) p<0.0001
(sqrt) sTNF-RI	0.14 (0.09,0.20) p<0.0001	0.06 (0.38,0.08) p<0.0001	0.02 (0.002,0.040) p=0.03			12.3 (12.0,12.5) p<0.0001
(inv) sBAFF	0.15 (0.099,0.20) p<0.0001	0.06 (0.04,0.08) p<0.0001	-0.0001 $(-2 \times 10^{-3}, 3 \times 10^{-4})$ p=0.006			12.2 (11.9,12.4) p<0.0001
EBV- VCA Ab	0.16 (0.10,0.23) p<0.0001	0.06 (0.04,0.09) p<0.0001	-6.3×10^{-7} $(-4.7 \times 10^{-6}, 3.5 \times 10^{-6})$ p=0.76			12.2 (12.0,12.5) p<0.0001

Supplementary Table 1. Results of model fitting for CMV antibody. This table reports model parameters to support results of the main text. Associations of each immune parameter with CMVgB antibody, as well as changes in these associations with continued ART were investigated using the regression model for (\ln) CMVgB antibody over time (*equation 1*). (\ln) HIVgp41 antibody and (\ln) total IgG were found to have a significant change in their association with (\ln) CMVgB antibody over time (indicated by Interaction time terms P and Q in table). $(\sqrt{\text{CD4}})$ T-cell counts, (\ln) CMV IE-1 antibody, $(\sqrt{\text{sTNF-RI}})$ and (inv) sBAFF were found to associate with (\ln) CMVgB antibody, but no variation was found in these associations with time (P and Q interaction terms $p > 0.05$, and hence omitted). Age, sCD14 and EBV-VCA antibody were found to have no association with (\ln) CMVgB antibody over time.

Equation 1: fractional polynomial describing (\ln) CMVgB antibody over time with continued ART. Z, W are time term coefficients. S is the coefficient for the covariate in the model, P and Q are coefficients for interaction terms.

(\ln) CMVgB antibody

$$\begin{aligned}
 = & Z \left[\left(\frac{\text{Timepoint} + 1}{10} \right)^{-2} - 6.11 \right] + W \left[\left(\frac{\text{Timepoint} + 1}{10} \right)^{-2} \times \ln \left(\frac{\text{Timepoint} + 1}{10} \right) + 5.534 \right] \\
 & + S[\text{Variable}] + P \left[\left(\frac{\text{Timepoint} + 1}{10} \right)^{-2} - 6.11 \right] * [\text{Variable}] \\
 & + Q \left[\left(\frac{\text{Timepoint} + 1}{10} \right)^{-2} \times \ln \left(\frac{\text{Timepoint} + 1}{10} \right) + 5.534 \right] * [\text{Variable}] + \text{constant}
 \end{aligned}$$

	A.	B.	C.	D.	
	Group	(inv)sBAFF	(inv)sBAFF	Interaction term	Constant
Outcome	Coefficient (95% CI) p-value	Coefficient (95% CI) p-value	Coefficient (95% CI) p-value	Coefficient (95% CI) p-value	Coefficient (95% CI) p-value
(In)CMV lysate antibody	3.2 (1.5,4.9) 0.001	-78 (-664,508) 0.79	-1064 (-1787, -341) 0.006	-985 (1916,55) 0.04	9.9 (8.6,11.17) 0.0001
(In) CMVgB antibody	2.6 (-0.9,4.3) 0.004	258 (-327,843) 0.40	-495 (-1216,226) 0.17	-753 (-1682,175) 0.11	9.9 (8.6,11.20) <0.0001
(In)CMV IE-1 antibody	3.8 (1.2,6.4) 0.006	232 (-675,1139) 0.60	-1157 (-2275,-38) 0.04	-1388 (-2830,52) 0.06	8.7 (6.7,10.7) <0.0001

Supplementary Table 2. Coefficients and confidence intervals for multivariate modelling, with antibodies reactive with each of the 3 CMV antigens as the outcome. Column A- difference in level of each CMV antibody between patients and controls and when all other variables are zero. Column B- association of CMV antibody and sBAFF in controls and

(column C) HIV patients. Column D- difference in association of CMV antibody and sBAFF in HIV patients compared to association in controls.