

Health impact of seven herpesviruses on (pre)diabetes incidence and HbA1c: results from the KORA cohort

Electronic supplementary material – contents

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ESM Tables

ESM Table 1: Demographical overview at baseline (F4) and follow-up (FF4)

	Main analyses (n=1967)		VZV (due to antibody failure n=1540)	
	Baseline (F4)	Follow-up (FF4)	Baseline (F4)	Follow-up (FF4)
Male	968 (49.2%)		765 (49.7%)	
Median age (years)	54 (range 32–81)	61 (range 39–88)	54 (range 32–81)	61 (range 39–88)
Median BMI (kg/m ²)	27 (IQR 24–30)	27 (IQR 24–31)	27 (IQR 24–30)	27 (IQR 24–31)
Median years of education	11 (IQR 10–13)	11 (IQR 10–13)	11 (IQR 10–13)	11 (IQR 10–13)
Percent ever smoker (median packyears)	57.9% (15.0 PY)	58.1% (15.4 PY)	58.0% (15.0 PY)	58.1% (15.3 PY)
Number IFG/IGT	542 (27.5%)	713 (36.2%)	422 (27.4%)	561 (36.4%)
Number T2D	168 (8.5%)	287 (14.6%)	132 (8.6%)	233 (15.1%)

ESM Table 2: Comparison of baseline (F4) characteristics of participants and non-participants

	Participants (n=1967)	Non-participants (n=1110)	Difference p-value
Male	968 (49.2%)	517 (46.6%)	=0.2
Median age (years)	54 (IQR 43-64, range 32-81)	62 (IQR 47-72, range 32-81)	<0.001
Median BMI (kg/m ²)	26.68 (IQR 24.16-29.91, range 16.32-51.65), 2 (0.1%) NA	27.53 (IQR 24.655-30.82, range 16.05-55.99), 15 (1.4%) NA	<0.001
Median years of education	11 (IQR 10-13, range 8-17), 4 (0.2%) NA	10 (IQR 10-13, range 8-17), 1 (0.1%) NA	<0.001
Ever smoker	1139 (57.9%), 1 (0.1%) NA	655 (59.3%), 5 (0.5%) NA	=0.5
Physically active	1150 (58.5%)	521 (47.1%), 5 (0.5%) NA	<0.001
Parental diabetes	451 (30.4%), 482 (24.5%) NA	190 (29.7%), 470 (42.3%) NA	=0.8
Hypertension	328 (16.7%), 3 (0.2%) NA	221 (20.0%), 5 (0.5%) NA	=0.03
Median triglycerides (mmol/l)	1.17 (IQR 0.79-1.66, range 0.24-10.25), 1 (0.1%) NA	1.23 (IQR 0.87-1.78, range 0.25-18.59), 5 (0.5%) NA	<0.001
Median total cholesterol / HDL-C	3.91 (IQR 3.21-4.73, range 1.87-11.71), 1 (0.1%) NA	3.91 (IQR 3.26-4.77, range 1.84-9.4), 5 (0.5%) NA	=0.2
Median HOMA-IR	1.95 (IQR 1.35-2.93, range 0.3-26.03), 86 (4.4%) NA	2.12 (IQR 1.47-3.29, range 0.56-24.82), 153 (13.8%) NA	<0.001
Median fasting glucose (mmol/l)	5.17 (IQR 4.89-5.61, range 3.61-14), 4 (0.2%) NA	5.28 (IQR 4.89-5.83, range 3.61-18.94), 35 (3.2%) NA	<0.001
HSV1 serostatus	1731 (88.0%)	969 (90.8%), 43 (3.9%) NA	=0.02
HSV2 serostatus	211 (10.7%)	133 (12.5%), 43 (3.9%) NA	=0.2
VZV serostatus	1345 (78.5%), 253 (12.9%) NA	684 (78.4%), 238 (21.4%) NA	=1
EBV serostatus	1926 (97.9%)	1047 (98.1%), 43 (3.9%) NA	=0.8
CMV serostatus	903 (45.9%)	574 (53.8%), 43 (3.9%) NA	<0.001
HHV6 serostatus	768 (39.0%)	427 (40.0%), 43 (3.9%) NA	=0.6
HHV7 serostatus	1672 (85.0%)	906 (84.9%), 43 (3.9%) NA	=1
Number IFG/IGT	542 (27.6%)	311 (28.0%)	=0.8
Number T2D	168 (8.5%)	174 (15.7%)	<0.001
Number T1D / drug-induced diabetes	0	9 (0.8%)	<0.001
Number missing oGTT	0	81 (7.3%)	<0.001

ESM Table 3: Comparison of baseline (F4) characteristics of at risk participants and at risk non-participants

	At risk participants (n=1257)	At risk non-participants (n=535)	Difference p-value
Male	528 (42.0%)	216 (40.4%)	=0.6
Median age (years)	49 (IQR 41-59, range 32-81)	53 (IQR 42-66.5, range 32-81)	<0.001
Median BMI (kg/m ²)	25.595 (IQR 23.32-28.4775, range 16.32-46.73), 1 (0.1%) NA	25.815 (IQR 23.265-29.02, range 17.5-44.79), 1 (0.2%) NA	=0.5
Median years of education	11 (IQR 10-13, range 8-17), 4 (0.3%) NA	11 (IQR 10-13, range 8-17)	=0.02
Ever smoker	728 (58.0%), 1 (0.1%) NA	316 (59.4%), 3 (0.6%) NA	=0.6
Physically active	769 (61.2%)	267 (50.2%), 3 (0.6%) NA	<0.001
Parental diabetes	266 (26.2%), 242 (19.3%) NA	96 (26.6%), 174 (32.5%) NA	=0.9
Hypertension	131 (10.4%), 2 (0.2%) NA	75 (14.1%), 3 (0.6%) NA	=0.03
Median triglycerides (mmol/l)	1.01 (IQR 0.71-1.44, range 0.24-6.93)	1.09 (IQR 0.78-1.59, range 0.26-6.33)	=0.003
Median total cholesterol / HDL-C	3.67 (IQR 3.02-4.43, range 1.87-8.26)	3.69 (IQR 3.12-4.555, range 1.84-7.94)	=0.2
Median HOMA-IR	1.67 (IQR 1.19-2.25, range 0.3-11.72), 8 (0.6%) NA	1.73 (IQR 1.19-2.3675, range 0.56-15.11), 13 (2.4%) NA	=0.1
Median fasting glucose (mmol/l)	5 (IQR 4.72-5.22, range 3.61-5.5)	5 (IQR 4.72-5.22, range 3.89-5.5)	=0.4
HSV1 serostatus	1089 (86.6%)	453 (88.6%), 24 (4.5%) NA	=0.3
HSV2 serostatus	123 (9.8%)	78 (15.3%), 24 (4.5%) NA	=0.001
VZV serostatus	840 (77.0%), 166 (13.2%) NA	333 (79.9%), 118 (22.1%) NA	=0.3
EBV serostatus	1230 (97.9%)	499 (97.7%), 24 (4.5%) NA	=0.9
CMV serostatus	560 (44.6%)	250 (48.9%), 24 (4.5%) NA	=0.1
HHV6 serostatus	492 (39.1%)	218 (42.7%), 24 (4.5%) NA	=0.2
HHV7 serostatus	1075 (85.5%)	443 (86.7%), 24 (4.5%) NA	=0.6

ESM Table 4: Antigens for 7 human herpesviruses

Virus	Antigen	Description	MFI-Threshold
HSV1	gG	Glycoprotein G	100
HSV2	mgG unique	Unique sequence of membrane-bound part of mature glycoprotein G	100
VZV (1 / 2)	gI(ORF67) gE(ORF68)	Glycoprotein I Glycoprotein E	100 80
EBV (2 / 4)	Zebra EBNA-1 EA-D VCA p18	Virus protein ZEBRA Nuclear antigen 1 (EBNA-1) Early antigen-diffuse (EA-D) Viral capsid antigen (VCA p18)	150 150 150 200
CMV (2 / 4)	pp 28 pp 52 pp 65 pp150 Nter	Protein pp 28 Protein pp 52 Protein pp 65 Protein pp 150 (N-terminus)	150 150 150 150
HHV6 (2 / 4)	IE1A trunc. p100 trunc. IE1B trunc. p101K trunc.	6A Immediate-Early 1 Protein 6A antigenic tegument protein 6B Immediate-Early 1 Protein variant B 6B antigenic tegument protein	50 50 50 50
HHV7	U14	Protein U14, putative structural function	100

ESM Table 5: Individual model coefficients for incidence models for HSV1

	Adjusted model 1	Adjusted model 2	Adjusted model 3	Adjusted model 4
HSV1 (binary)	1.14 (0.78, 1.69) p=0.5	1.03 (0.69, 1.55) p=0.9	1.04 (0.69, 1.58) p=0.9	0.98 (0.64, 1.52) p=0.9
Male (binary)	2.22 (1.72, 2.85) p<0.001	2.18 (1.67, 2.85) p<0.001	1.92 (1.44, 2.56) p<0.001	1.28 (0.94, 1.74) p=0.1
Age (years)	1.04 (1.03, 1.05) p<0.001	1.04 (1.03, 1.05) p<0.001	1.04 (1.03, 1.05) p<0.001	1.03 (1.02, 1.04) p<0.001
BMI (kg/m²)		1.12 (1.09, 1.16) p<0.001	1.06 (1.02, 1.10) p=0.005	1.06 (1.02, 1.11) p=0.003
Years of education (years)		0.96 (0.91, 1.01) p=0.1	0.96 (0.91, 1.01) p=0.1	0.95 (0.90, 1.01) p=0.09
Ever smoker (binary)		1.12 (0.86, 1.46) p=0.4	1.10 (0.84, 1.45) p=0.5	1.05 (0.79, 1.40) p=0.7
Physically active (binary)		0.92 (0.71, 1.21) p=0.6	0.96 (0.73, 1.26) p=0.7	0.94 (0.71, 1.26) p=0.7
Parental diabetes (binary)			1.46 (1.06, 2.00) p=0.02	1.33 (0.95, 1.85) p=0.09
Hypertension (binary)			1.22 (0.81, 1.83) p=0.3	1.16 (0.75, 1.78) p=0.5
Triglycerides (mmol/l)			0.88 (0.69, 1.11) p=0.3	0.86 (0.67, 1.11) p=0.2
Total cholesterol / HDL-C (ratio)			1.28 (1.09, 1.50) p=0.003	1.31 (1.11, 1.55) p=0.001
HOMA-IR (continuous)			1.42 (1.21, 1.68) p<0.001	1.06 (0.90, 1.26) p=0.5
Fasting glucose (mmol/l)				18.53 (10.51, 33.33) p<0.001

ESM Table 6: Individual model coefficients for incidence models for HSV2

	Adjusted model 1	Adjusted model 2	Adjusted model 3	Adjusted model 4
HSV2 (binary)	1.57 (1.05, 2.34) p=0.03	1.59 (1.05, 2.40) p=0.03	1.57 (1.02, 2.40) p=0.04	1.59 (1.01, 2.48) p=0.04
Male (binary)	2.22 (1.72, 2.85) p<0.001	2.20 (1.68, 2.87) p<0.001	1.94 (1.45, 2.59) p<0.001	1.29 (0.95, 1.76) p=0.1
Age (years)	1.04 (1.03, 1.05) p<0.001	1.04 (1.03, 1.05) p<0.001	1.04 (1.03, 1.05) p<0.001	1.03 (1.02, 1.04) p<0.001
BMI (kg/m²)		1.12 (1.09, 1.16) p<0.001	1.06 (1.02, 1.10) p=0.005	1.06 (1.02, 1.11) p=0.003
Years of education (years)		0.96 (0.91, 1.01) p=0.1	0.96 (0.91, 1.01) p=0.1	0.95 (0.90, 1.01) p=0.08
Ever smoker (binary)		1.10 (0.85, 1.44) p=0.5	1.09 (0.83, 1.43) p=0.5	1.04 (0.78, 1.39) p=0.8
Physically active (binary)		0.93 (0.71, 1.21) p=0.6	0.96 (0.73, 1.26) p=0.8	0.94 (0.71, 1.26) p=0.7
Parental diabetes (binary)			1.45 (1.06, 1.99) p=0.02	1.33 (0.95, 1.85) p=0.09
Hypertension (binary)			1.18 (0.77, 1.78) p=0.4	1.11 (0.72, 1.71) p=0.6
Triglycerides (mmol/l)			0.87 (0.68, 1.10) p=0.3	0.86 (0.67, 1.10) p=0.2
Total cholesterol / HDL-C (ratio)			1.28 (1.09, 1.51) p=0.003	1.31 (1.11, 1.55) p=0.001
HOMA-IR (continuous)			1.42 (1.21, 1.68) p<0.001	1.06 (0.90, 1.26) p=0.5
Fasting glucose (mmol/l)				18.58 (10.52, 33.45) p<0.001

ESM Table 7: Individual model coefficients for incidence models for VZV

	Adjusted model 1	Adjusted model 2	Adjusted model 3	Adjusted model 4
VZV (binary)	0.87 (0.63, 1.19) p=0.4	0.76 (0.55, 1.06) p=0.1	0.75 (0.54, 1.05) p=0.09	0.74 (0.52, 1.06) p=0.1
Male (binary)	2.17 (1.66, 2.84) p<0.001	2.13 (1.60, 2.83) p<0.001	1.95 (1.44, 2.66) p<0.001	1.27 (0.91, 1.77) p=0.2
Age (years)	1.04 (1.03, 1.05) p<0.001	1.04 (1.02, 1.05) p<0.001	1.04 (1.03, 1.05) p<0.001	1.03 (1.01, 1.04) p<0.001
BMI (kg/m²)		1.12 (1.08, 1.16) p<0.001	1.06 (1.02, 1.10) p=0.007	1.07 (1.02, 1.11) p=0.004
Years of education (years)		0.96 (0.91, 1.02) p=0.2	0.97 (0.91, 1.02) p=0.3	0.96 (0.90, 1.02) p=0.2
Ever smoker (binary)		1.10 (0.83, 1.46) p=0.5	1.08 (0.81, 1.44) p=0.6	1.02 (0.75, 1.38) p=0.9
Physically active (binary)		0.89 (0.67, 1.18) p=0.4	0.91 (0.68, 1.22) p=0.5	0.90 (0.66, 1.23) p=0.5
Parental diabetes (binary)			1.51 (1.07, 2.10) p=0.02	1.38 (0.96, 1.96) p=0.08
Hypertension (binary)			1.18 (0.76, 1.83) p=0.5	1.12 (0.70, 1.76) p=0.6
Triglycerides (mmol/l)			0.89 (0.68, 1.14) p=0.3	0.87 (0.67, 1.13) p=0.3
Total cholesterol / HDL-C (ratio)			1.23 (1.04, 1.46) p=0.01	1.27 (1.06, 1.52) p=0.009
HOMA-IR (continuous)			1.41 (1.19, 1.69) p<0.001	1.03 (0.86, 1.23) p=0.8
Fasting glucose (mmol/l)				24.89 (13.39, 47.39) p<0.001

ESM Table 8: Individual model coefficients for incidence models for EBV

	Adjusted model 1	Adjusted model 2	Adjusted model 3	Adjusted model 4
EBV (binary)	0.55 (0.25, 1.24) p=0.1	0.61 (0.26, 1.43) p=0.2	0.63 (0.26, 1.51) p=0.3	0.59 (0.24, 1.48) p=0.3
Male (binary)	2.18 (1.70, 2.81) p<0.001	2.16 (1.65, 2.82) p<0.001	1.90 (1.42, 2.53) p<0.001	1.27 (0.93, 1.72) p=0.1
Age (years)	1.04 (1.03, 1.06) p<0.001	1.04 (1.03, 1.05) p<0.001	1.04 (1.03, 1.05) p<0.001	1.03 (1.02, 1.04) p<0.001
BMI (kg/m²)		1.12 (1.09, 1.16) p<0.001	1.06 (1.02, 1.10) p=0.006	1.06 (1.02, 1.11) p=0.004
Years of education (years)		0.96 (0.91, 1.01) p=0.1	0.96 (0.91, 1.01) p=0.1	0.95 (0.90, 1.01) p=0.09
Ever smoker (binary)		1.13 (0.86, 1.47) p=0.4	1.11 (0.85, 1.46) p=0.5	1.06 (0.80, 1.41) p=0.7
Physically active (binary)		0.93 (0.71, 1.21) p=0.6	0.96 (0.73, 1.26) p=0.8	0.94 (0.71, 1.26) p=0.7
Parental diabetes (binary)			1.44 (1.05, 1.98) p=0.02	1.32 (0.95, 1.84) p=0.1
Hypertension (binary)			1.22 (0.81, 1.84) p=0.3	1.16 (0.75, 1.78) p=0.5
Triglycerides (mmol/l)			0.88 (0.69, 1.12) p=0.3	0.87 (0.68, 1.12) p=0.3
Total cholesterol / HDL-C (ratio)			1.28 (1.09, 1.50) p=0.003	1.31 (1.11, 1.55) p=0.002
HOMA-IR (continuous)			1.42 (1.21, 1.67) p<0.001	1.06 (0.90, 1.26) p=0.5
Fasting glucose (mmol/l)				18.58 (10.53, 33.42) p<0.001

ESM Table 9: Individual model coefficients for incidence models for CMV

	Adjusted model 1	Adjusted model 2	Adjusted model 3	Adjusted model 4
CMV (binary)	1.37 (1.06, 1.77) p=0.02	1.35 (1.03, 1.76) p=0.03	1.37 (1.04, 1.79) p=0.02	1.33 (1.00, 1.78) p=0.05
Male (binary)	2.28 (1.77, 2.95) p<0.001	2.26 (1.73, 2.97) p<0.001	2.00 (1.50, 2.68) p<0.001	1.33 (0.98, 1.82) p=0.07
Age (years)	1.04 (1.03, 1.05) p<0.001	1.04 (1.02, 1.05) p<0.001	1.04 (1.03, 1.05) p<0.001	1.03 (1.01, 1.04) p<0.001
BMI (kg/m²)		1.12 (1.09, 1.16) p<0.001	1.06 (1.02, 1.10) p=0.006	1.06 (1.02, 1.11) p=0.004
Years of education (years)		0.96 (0.91, 1.01) p=0.09	0.96 (0.91, 1.01) p=0.1	0.95 (0.90, 1.01) p=0.08
Ever smoker (binary)		1.10 (0.84, 1.44) p=0.5	1.09 (0.83, 1.43) p=0.6	1.03 (0.78, 1.38) p=0.8
Physically active (binary)		0.93 (0.71, 1.22) p=0.6	0.97 (0.74, 1.28) p=0.8	0.96 (0.72, 1.28) p=0.8
Parental diabetes (binary)			1.44 (1.05, 1.98) p=0.02	1.32 (0.95, 1.84) p=0.1
Hypertension (binary)			1.26 (0.83, 1.89) p=0.3	1.20 (0.78, 1.84) p=0.4
Triglycerides (mmol/l)			0.87 (0.68, 1.11) p=0.3	0.86 (0.67, 1.10) p=0.2
Total cholesterol / HDL-C (ratio)			1.27 (1.09, 1.50) p=0.003	1.31 (1.11, 1.56) p=0.001
HOMA-IR (continuous)			1.43 (1.22, 1.69) p<0.001	1.07 (0.90, 1.27) p=0.4
Fasting glucose (mmol/l)				18.39 (10.41, 33.12) p<0.001

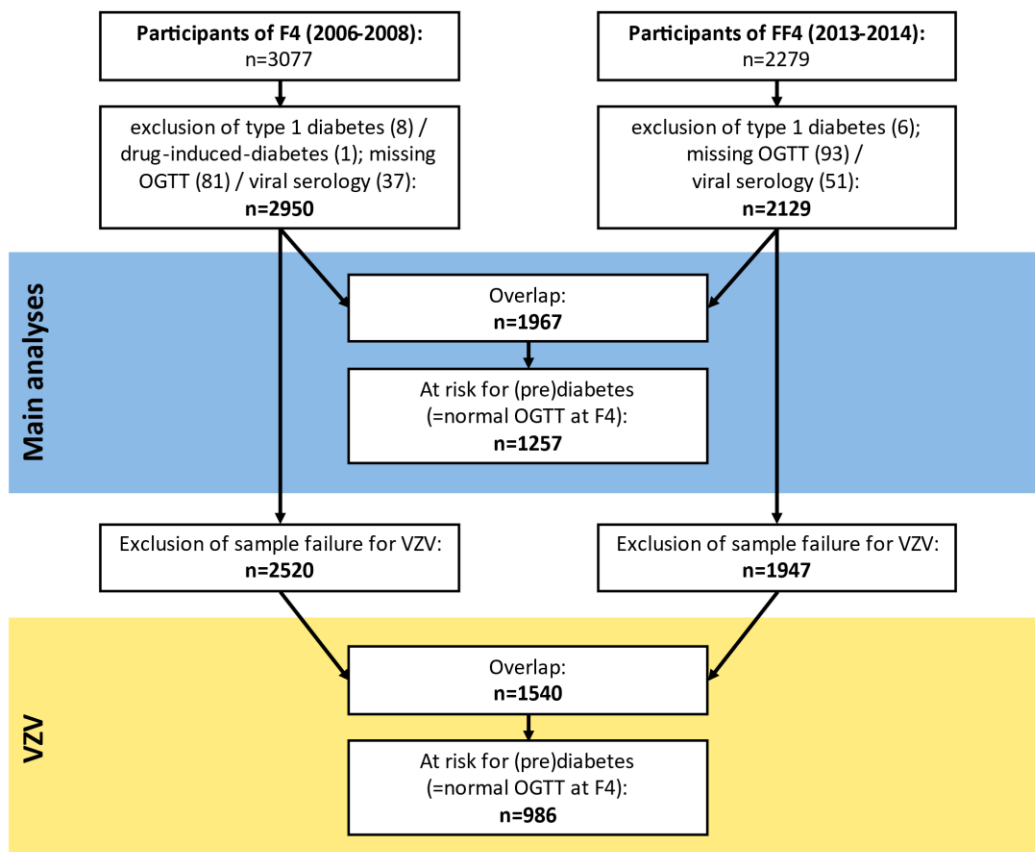
ESM Table 10: Individual model coefficients for incidence models for HHV6

	Adjusted model 1	Adjusted model 2	Adjusted model 3	Adjusted model 4
HHV6 (binary)	1.20 (0.93, 1.55) p=0.2	1.21 (0.93, 1.57) p=0.2	1.18 (0.90, 1.54) p=0.2	1.26 (0.95, 1.67) p=0.1
Male (binary)	2.22 (1.73, 2.86) p<0.001	2.19 (1.68, 2.87) p<0.001	1.93 (1.45, 2.58) p<0.001	1.30 (0.95, 1.76) p=0.1
Age (years)	1.04 (1.03, 1.06) p<0.001	1.04 (1.03, 1.05) p<0.001	1.04 (1.03, 1.05) p<0.001	1.03 (1.02, 1.04) p<0.001
BMI (kg/m²)		1.12 (1.09, 1.16) p<0.001	1.06 (1.02, 1.10) p=0.005	1.06 (1.02, 1.11) p=0.003
Years of education (years)		0.96 (0.91, 1.01) p=0.1	0.96 (0.91, 1.01) p=0.1	0.95 (0.90, 1.01) p=0.08
Ever smoker (binary)		1.11 (0.85, 1.45) p=0.4	1.10 (0.84, 1.44) p=0.5	1.04 (0.78, 1.39) p=0.8
Physically active (binary)		0.93 (0.71, 1.21) p=0.6	0.96 (0.73, 1.27) p=0.8	0.95 (0.71, 1.27) p=0.7
Parental diabetes (binary)			1.46 (1.06, 2.00) p=0.02	1.34 (0.96, 1.86) p=0.09
Hypertension (binary)			1.22 (0.81, 1.84) p=0.3	1.16 (0.75, 1.78) p=0.5
Triglycerides (mmol/l)			0.88 (0.69, 1.12) p=0.3	0.87 (0.68, 1.11) p=0.3
Total cholesterol / HDL-C (ratio)			1.27 (1.08, 1.50) p=0.003	1.31 (1.11, 1.55) p=0.002
HOMA-IR (continuous)			1.42 (1.21, 1.68) p<0.001	1.06 (0.89, 1.25) p=0.5
Fasting glucose (mmol/l)				18.97 (10.73, 34.22) p<0.001

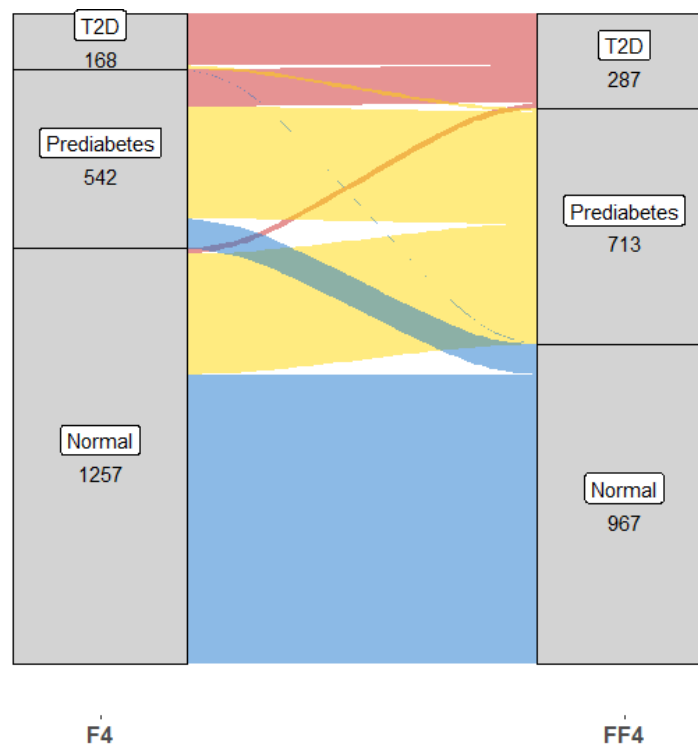
ESM Table 11: Individual model coefficients for incidence models for HHV7

	Adjusted model 1	Adjusted model 2	Adjusted model 3	Adjusted model 4
HHV7 (binary)	0.93 (0.66, 1.33) p=0.7	0.95 (0.66, 1.37) p=0.8	0.91 (0.63, 1.32) p=0.6	0.99 (0.68, 1.46) p=1
Male (binary)	2.20 (1.71, 2.83) p<0.001	2.17 (1.66, 2.84) p<0.001	1.91 (1.43, 2.55) p<0.001	1.28 (0.94, 1.74) p=0.1
Age (years)	1.04 (1.03, 1.05) p<0.001	1.04 (1.03, 1.05) p<0.001	1.04 (1.03, 1.05) p<0.001	1.03 (1.02, 1.04) p<0.001
BMI (kg/m²)		1.12 (1.09, 1.16) p<0.001	1.06 (1.02, 1.10) p=0.005	1.06 (1.02, 1.11) p=0.003
Years of education (years)		0.96 (0.91, 1.01) p=0.1	0.96 (0.91, 1.01) p=0.1	0.95 (0.90, 1.01) p=0.09
Ever smoker (binary)		1.12 (0.86, 1.46) p=0.4	1.10 (0.84, 1.45) p=0.5	1.05 (0.79, 1.40) p=0.7
Physically active (binary)		0.92 (0.71, 1.21) p=0.6	0.96 (0.73, 1.26) p=0.8	0.94 (0.71, 1.26) p=0.7
Parental diabetes (binary)			1.46 (1.06, 2.00) p=0.02	1.33 (0.96, 1.85) p=0.09
Hypertension (binary)			1.23 (0.81, 1.85) p=0.3	1.16 (0.75, 1.78) p=0.5
Triglycerides (mmol/l)			0.88 (0.69, 1.12) p=0.3	0.86 (0.67, 1.11) p=0.2
Total cholesterol / HDL-C (ratio)			1.28 (1.09, 1.50) p=0.003	1.31 (1.11, 1.55) p=0.001
HOMA-IR (continuous)			1.42 (1.21, 1.68) p<0.001	1.06 (0.90, 1.26) p=0.5
Fasting glucose (mmol/l)				18.51 (10.49, 33.31) p<0.001

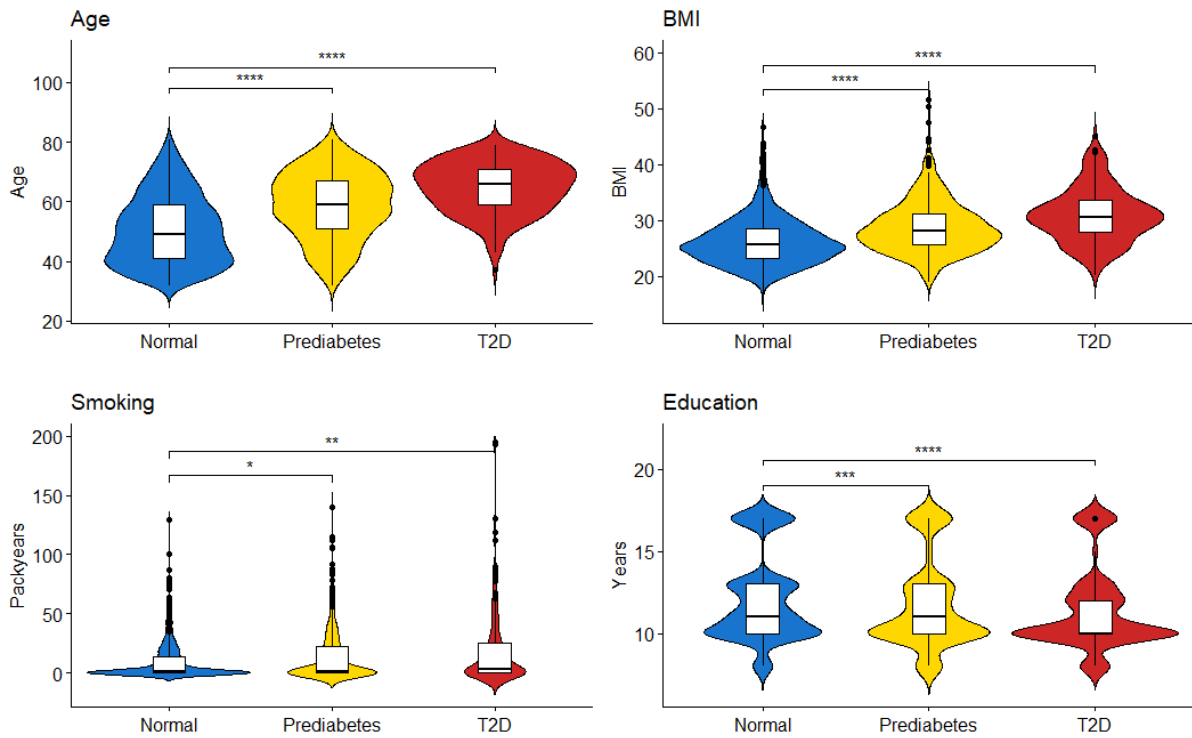
ESM Figures



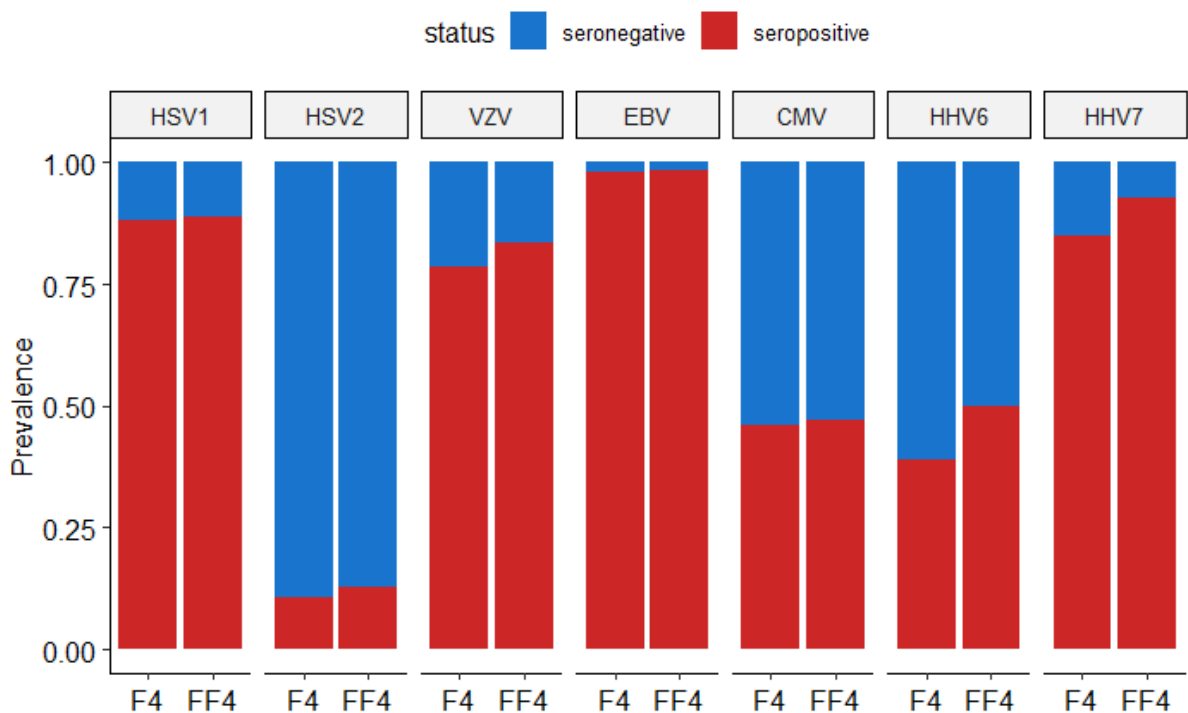
ESM Figure 1: Flowchart of participant selection



ESM Figure 2: Comparing glucose tolerance status at baseline (F4) and follow-up (FF4) with on average 6.5 years in between (n=1967)



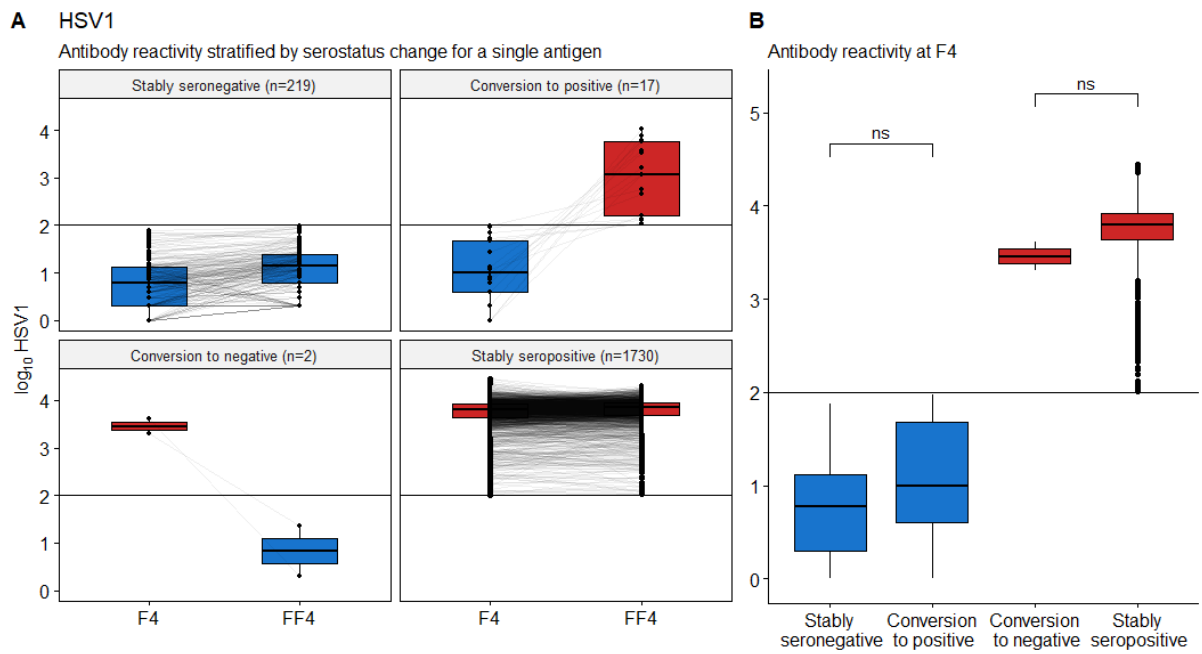
ESM Figure 3: T2D risk factors age, overweight, smoking, and poor-education at F4 timepoint



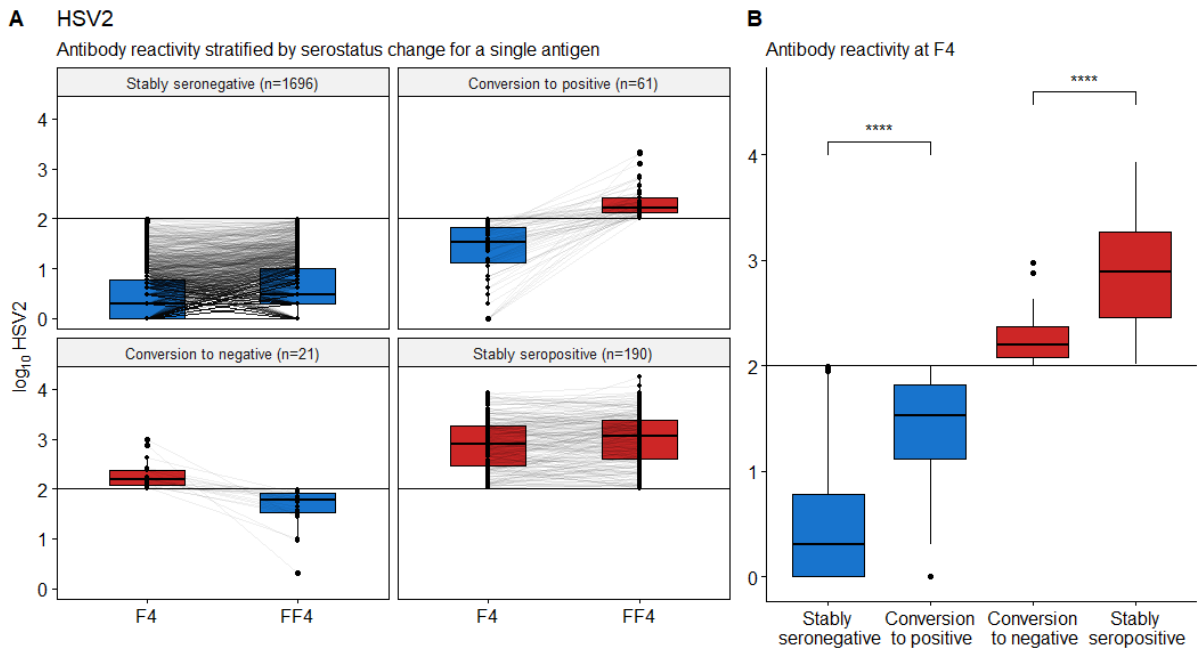
ESM Figure 4: Viral seroprevalences at baseline (F4) and follow-up (FF4) for the seven herpesviruses under investigation (n=1967, except for VZV n=1540)



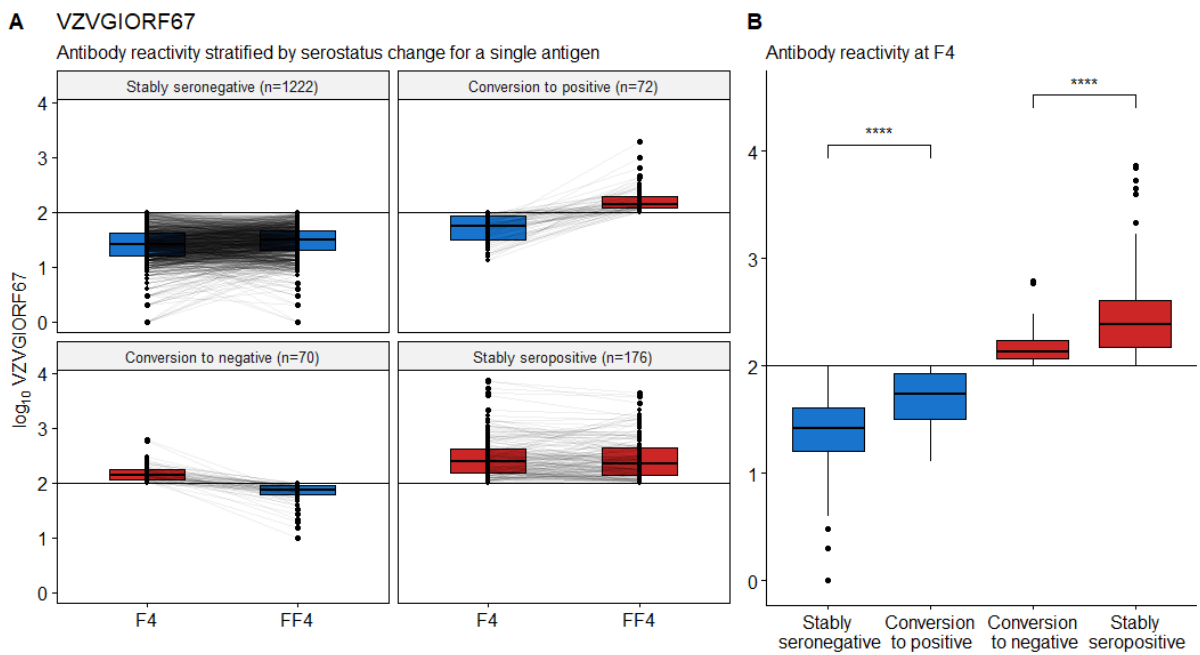
ESM Figure 5: Changes of number of seropositive viruses per person from F4 to FF4 (n=1540) (B).



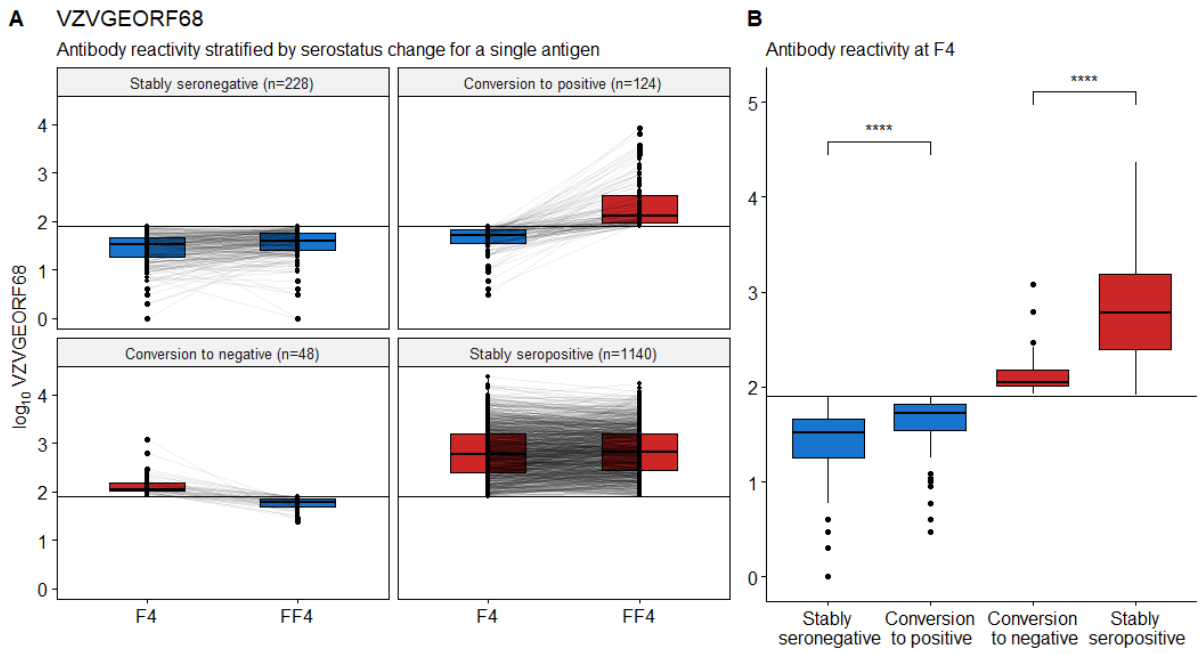
ESM Figure 6: Overview of serostatus change for HSV1 gG antigen



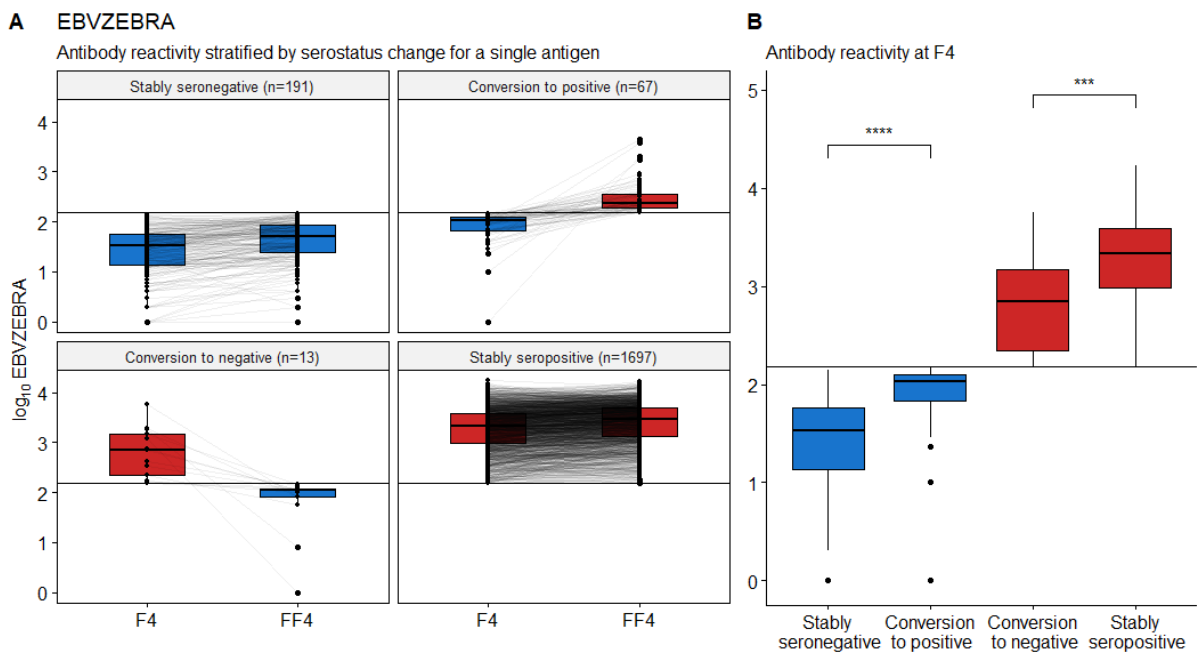
ESM Figure 7: Overview of serostatus change for HSV2 mgG unique antigen



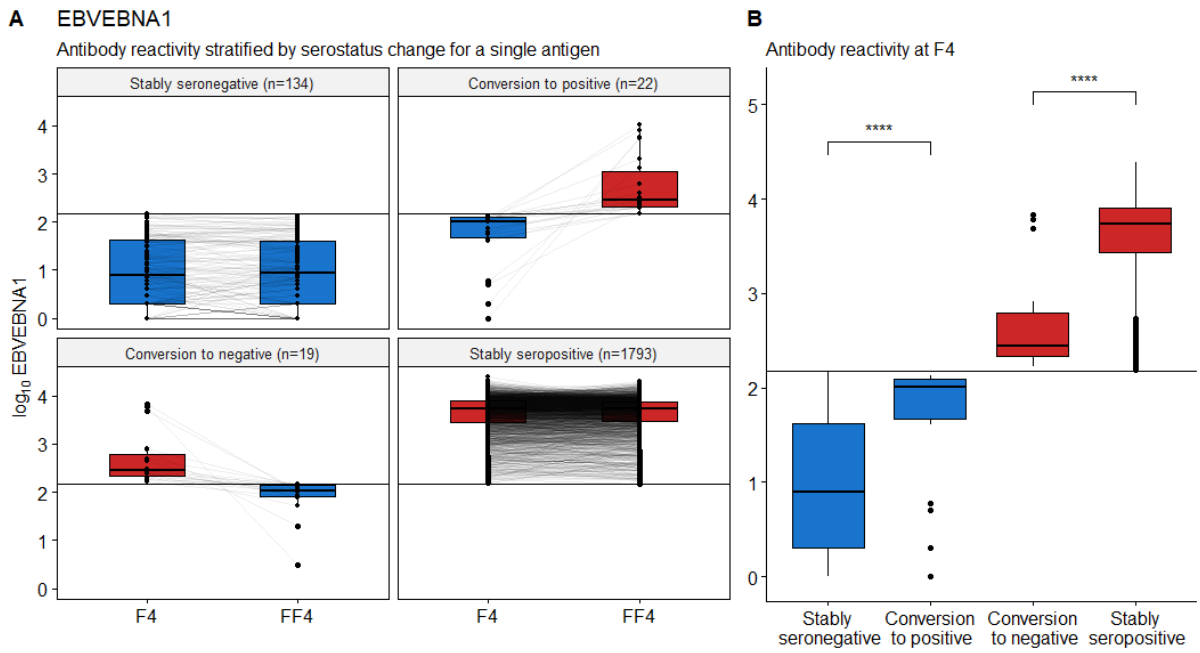
ESM Figure 8: Overview of serostatus change for VZV gI(ORF67) antigen



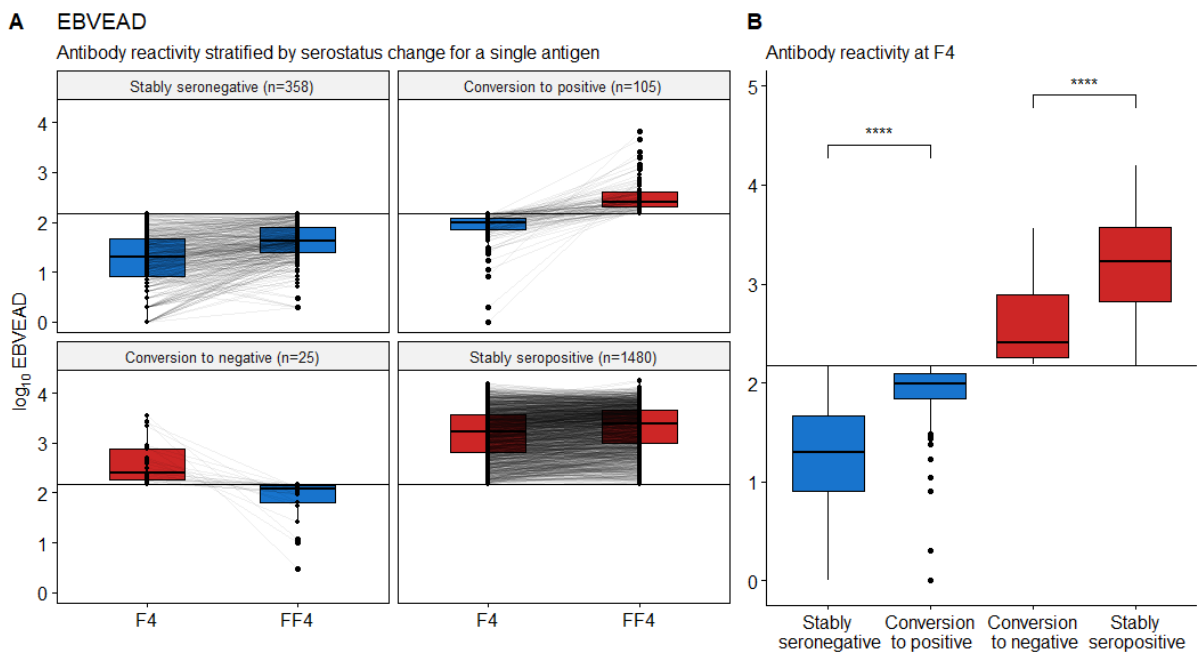
ESM Figure 9: Overview of serostatus change for VZV gE(ORF68) antigen



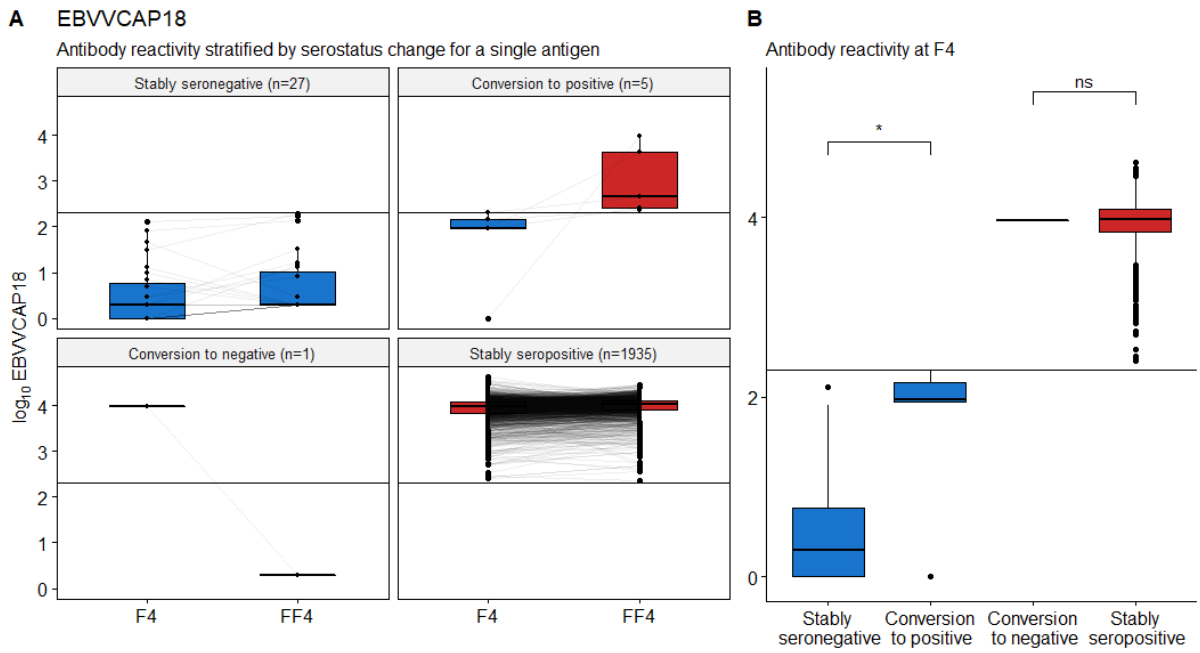
ESM Figure 10: Overview of serostatus change for EBV Zebra antigen



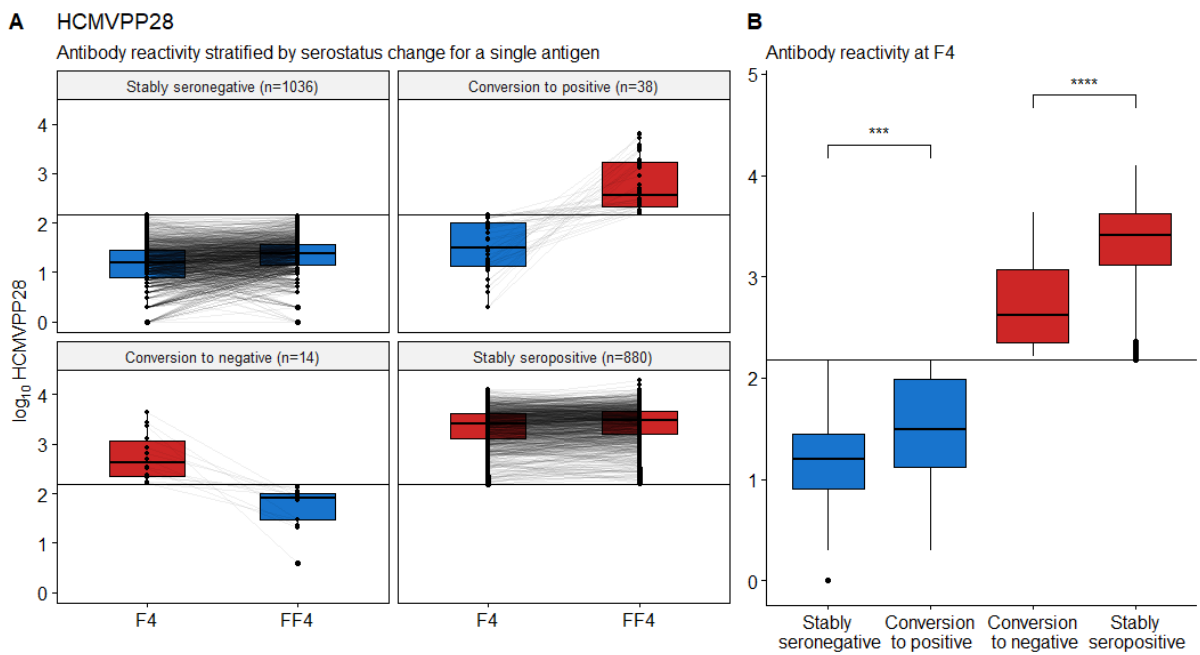
ESM Figure 11: Overview of serostatus change for EBV EBNA-1 antigen



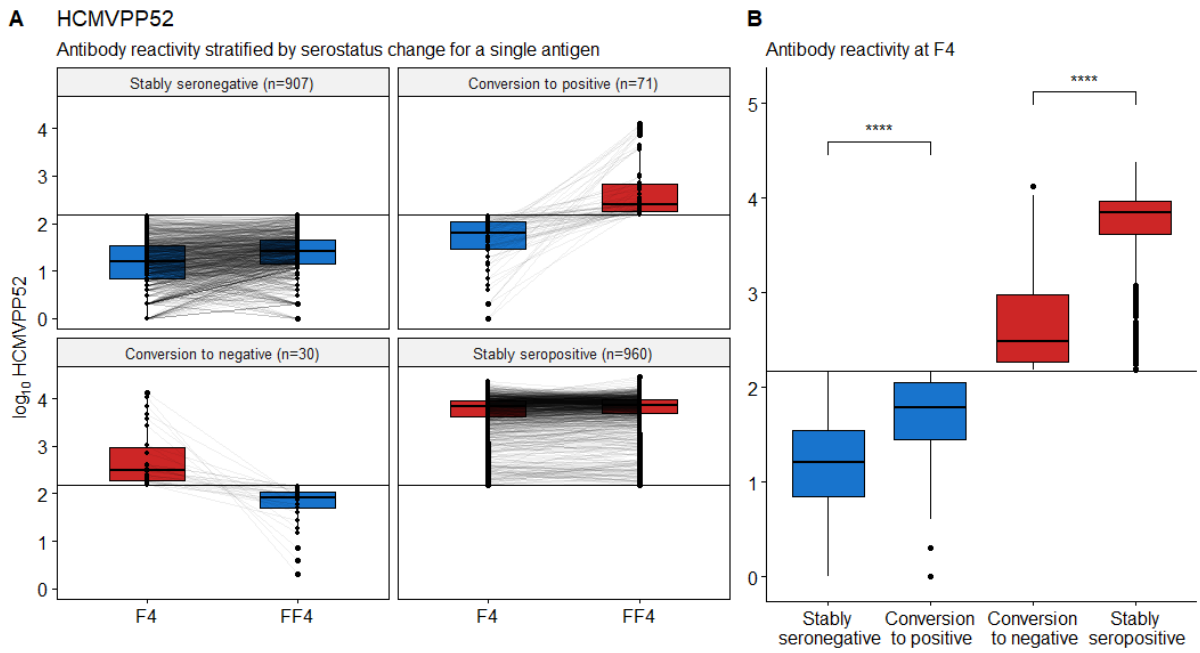
ESM Figure 12: Overview of serostatus change for EBV EA-D antigen



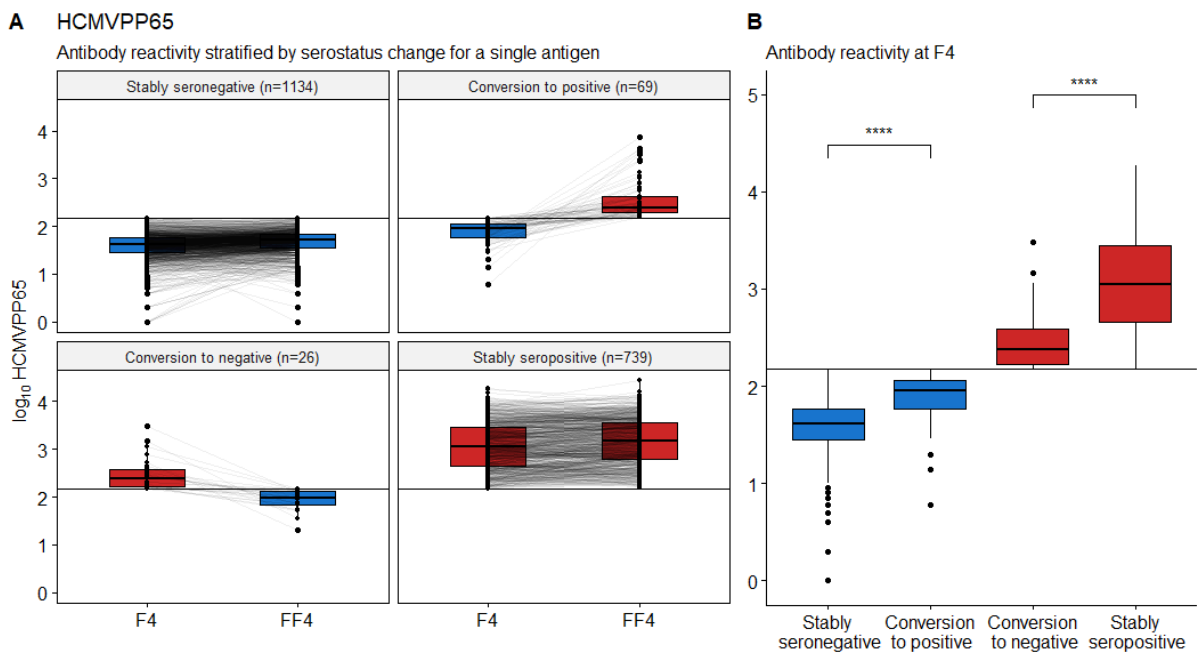
ESM Figure 13: Overview of serostatus change for EBV VCA p18 antigen



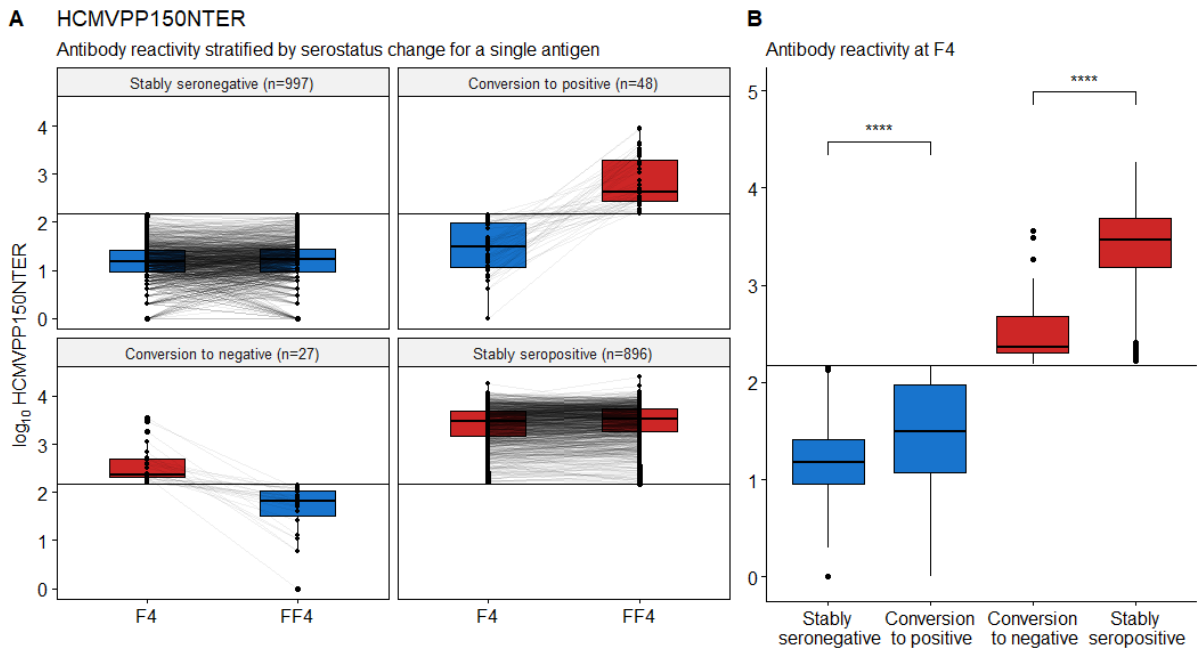
ESM Figure 14: Overview of serostatus change for CMV pp28 antigen



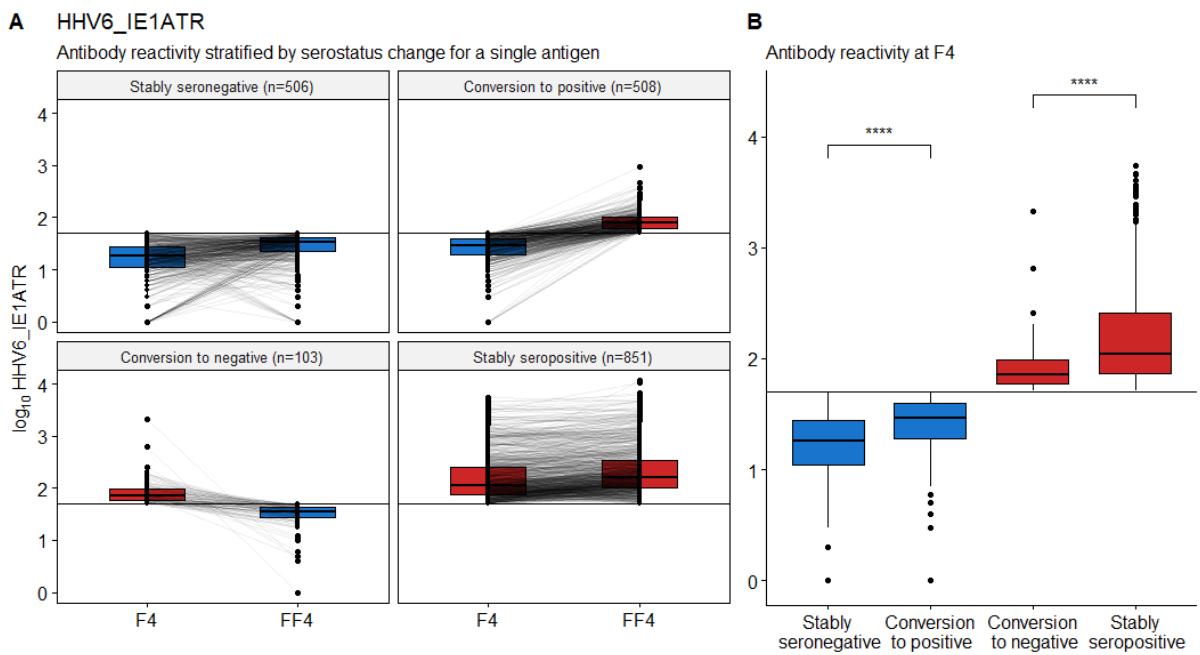
ESM Figure 15: Overview of serostatus change for CMV pp52 antigen



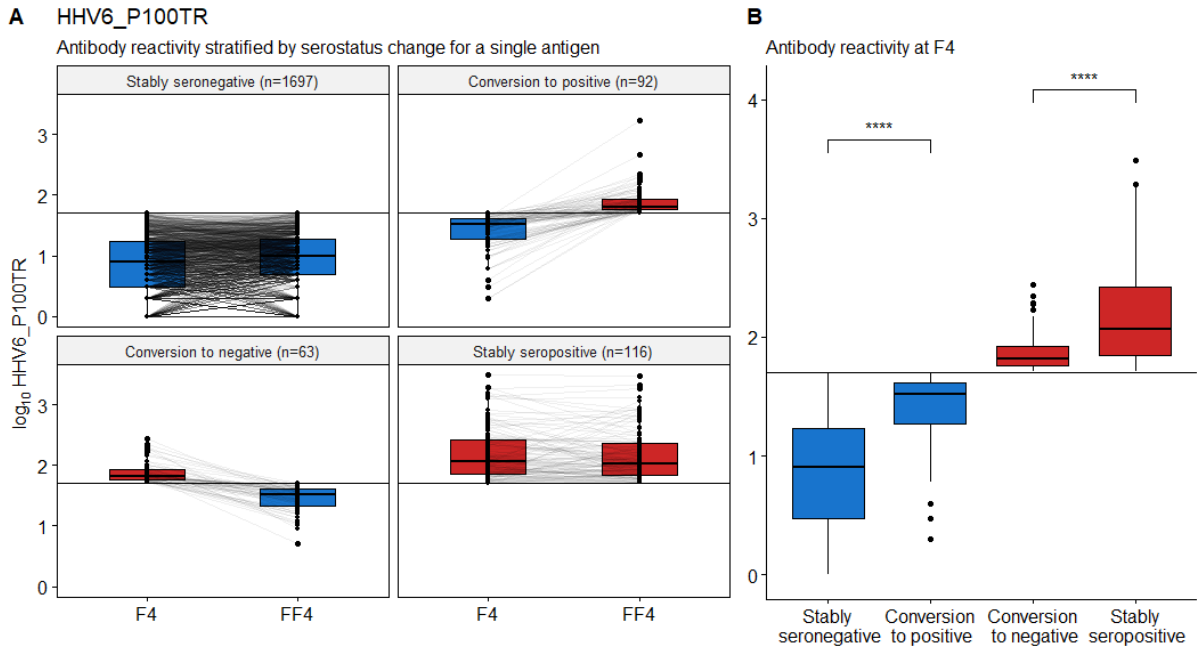
ESM Figure 16: Overview of serostatus change for CMV pp65 antigen



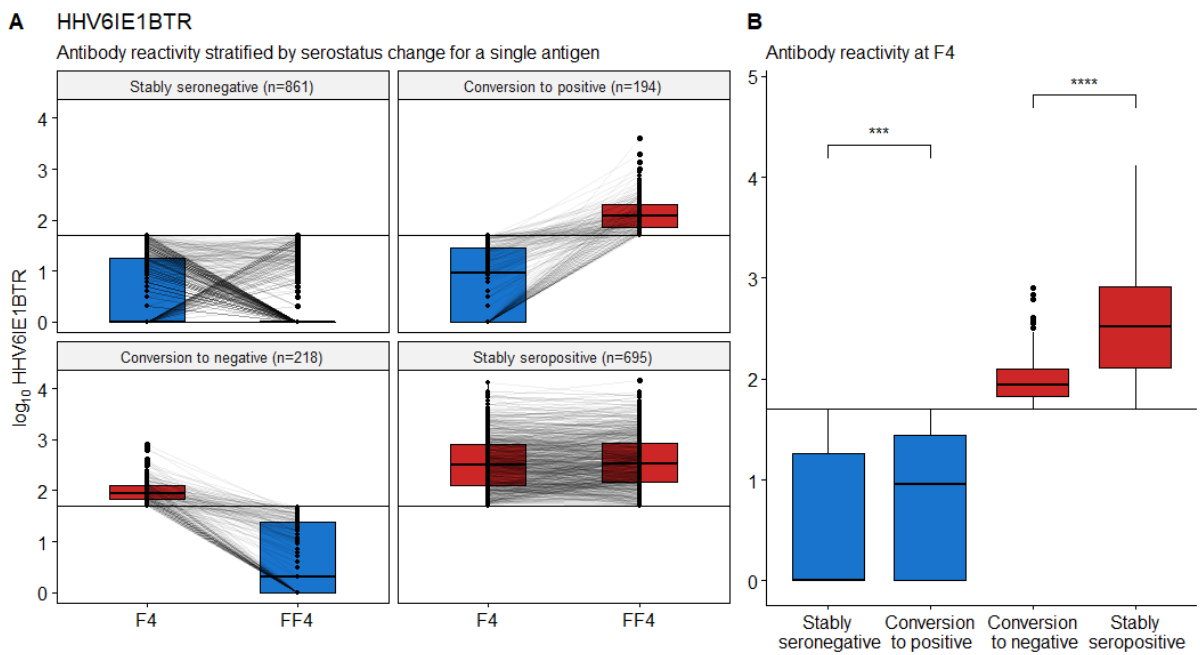
ESM Figure 17: Overview of serostatus change for CMV pp150 Nter antigen



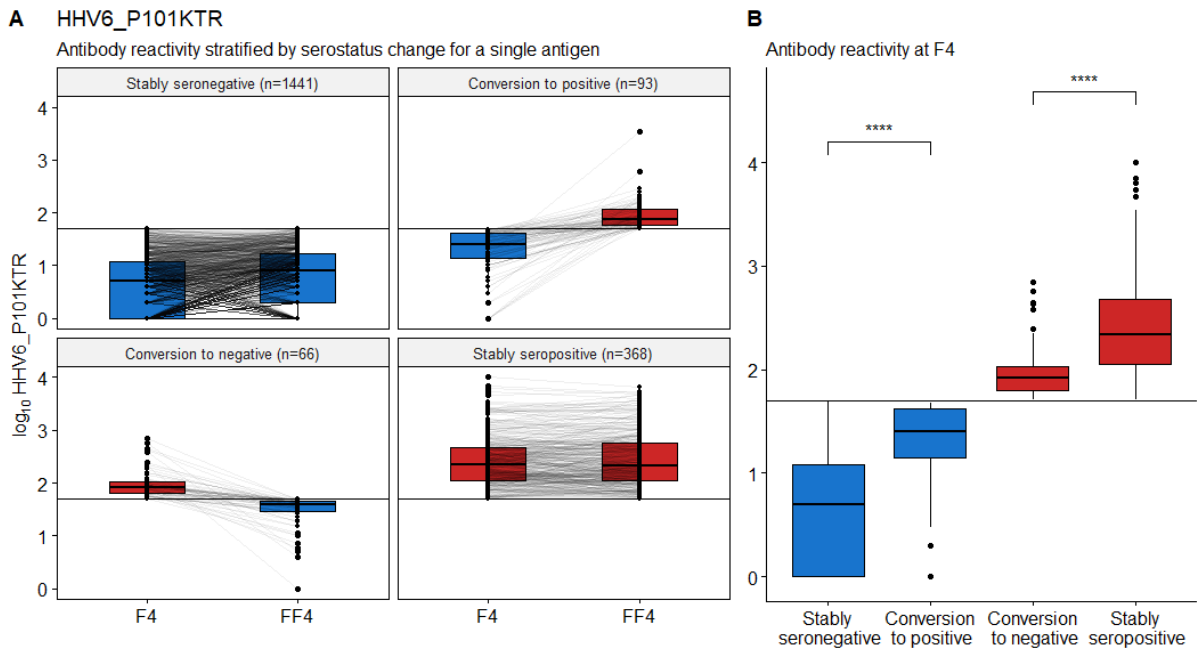
ESM Figure 18: Overview of serostatus change for HHV6 IE1A trunc. antigen



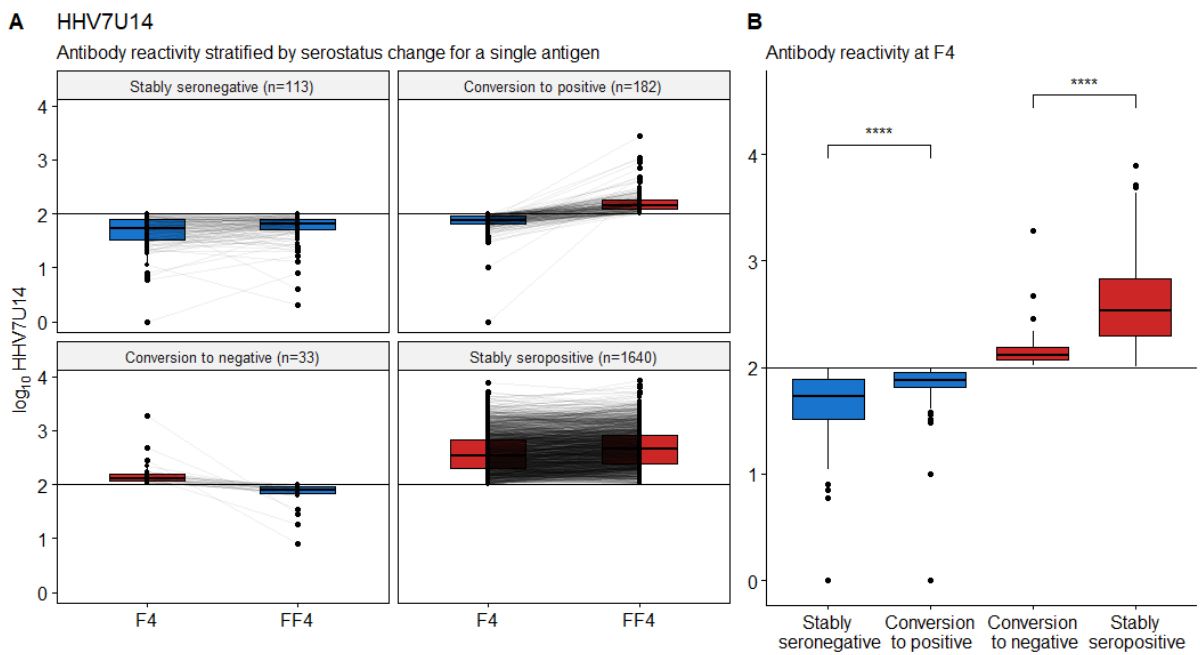
ESM Figure 19: Overview of serostatus change for HHV6 p100 trunc. antigen



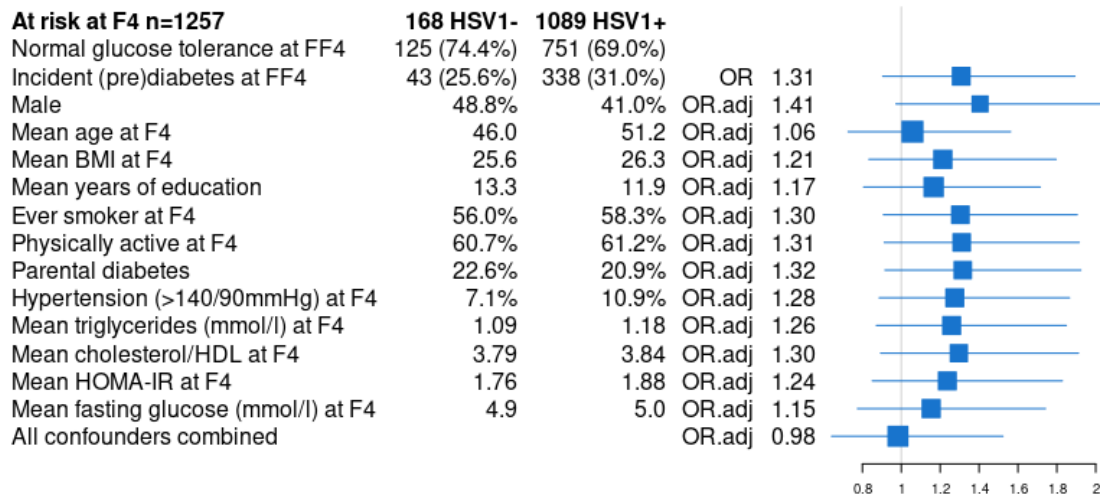
ESM Figure 20: Overview of serostatus change for HHV6 IE1B trunc. antigen



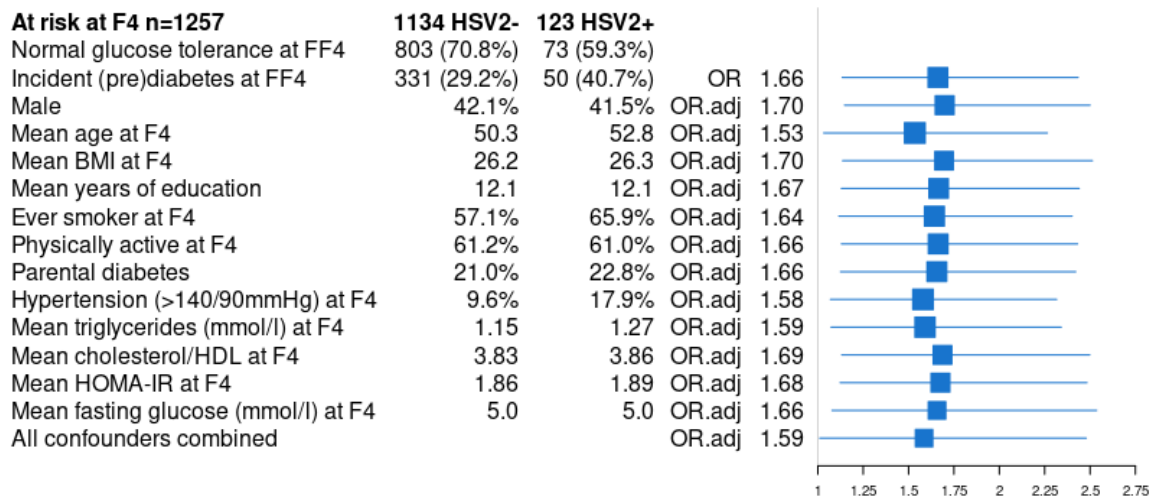
ESM Figure 21: Overview of serostatus change for HHV6 p101K trunc. antigen



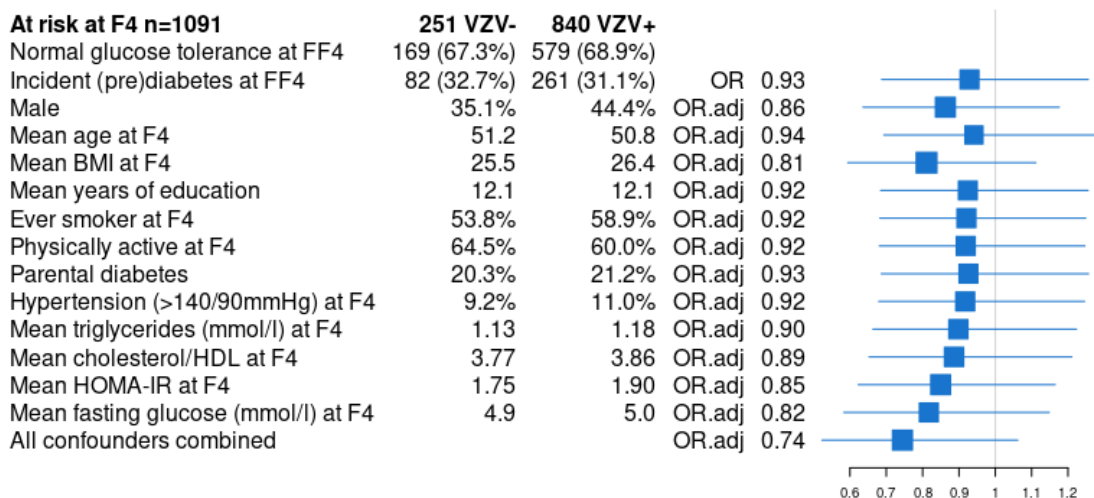
ESM Figure 22: Overview of serostatus change for HHV7 U14 antigen



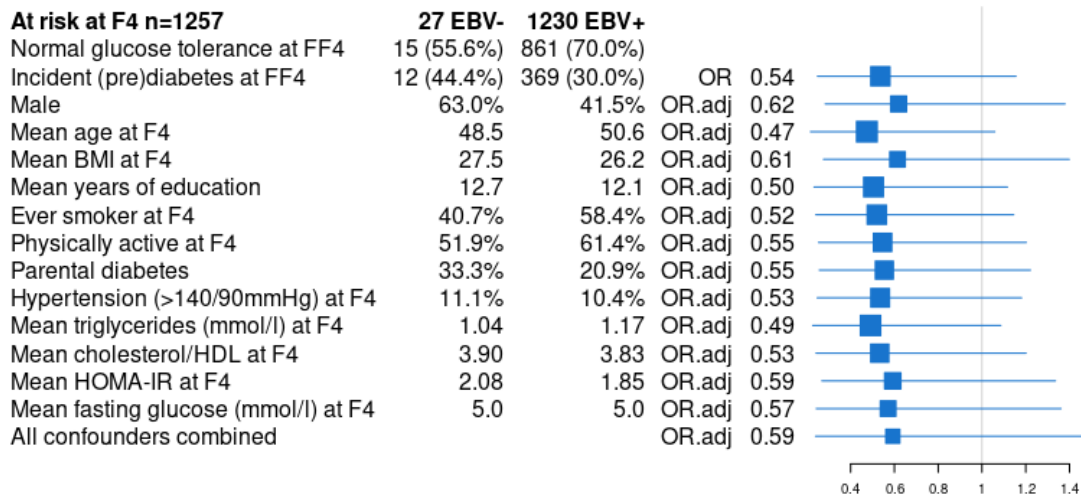
ESM Figure 23: Contingency table and contribution of individual covariates for the association of HSV1 with (pre)diabetes incidence



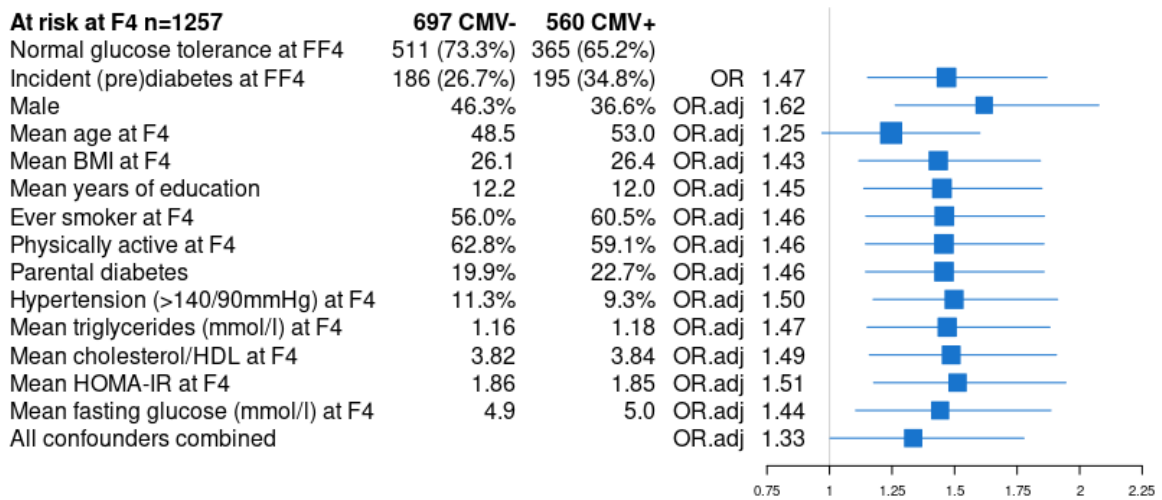
ESM Figure 24: Contingency table and contribution of individual covariates for the association of HSV2 with (pre)diabetes incidence



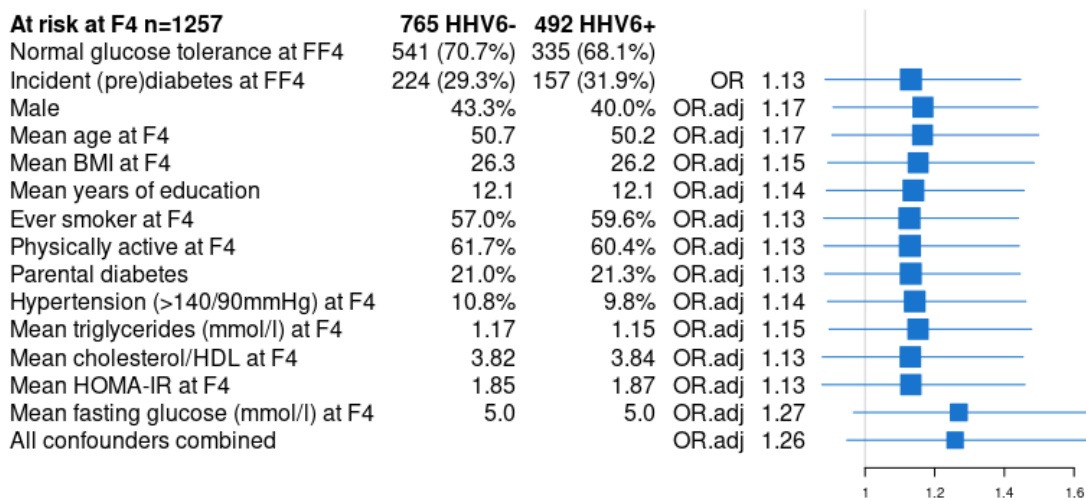
ESM Figure 25: Contingency table and contribution of individual covariates for the association of VZV with (pre)diabetes incidence



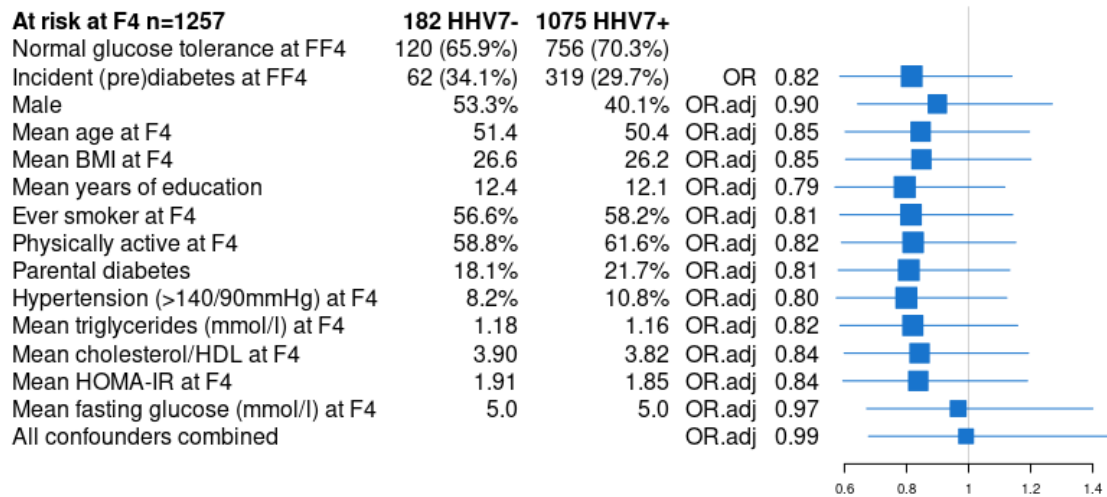
ESM Figure 26: Contingency table and contribution of individual covariates for the association of EBV with (pre)diabetes incidence



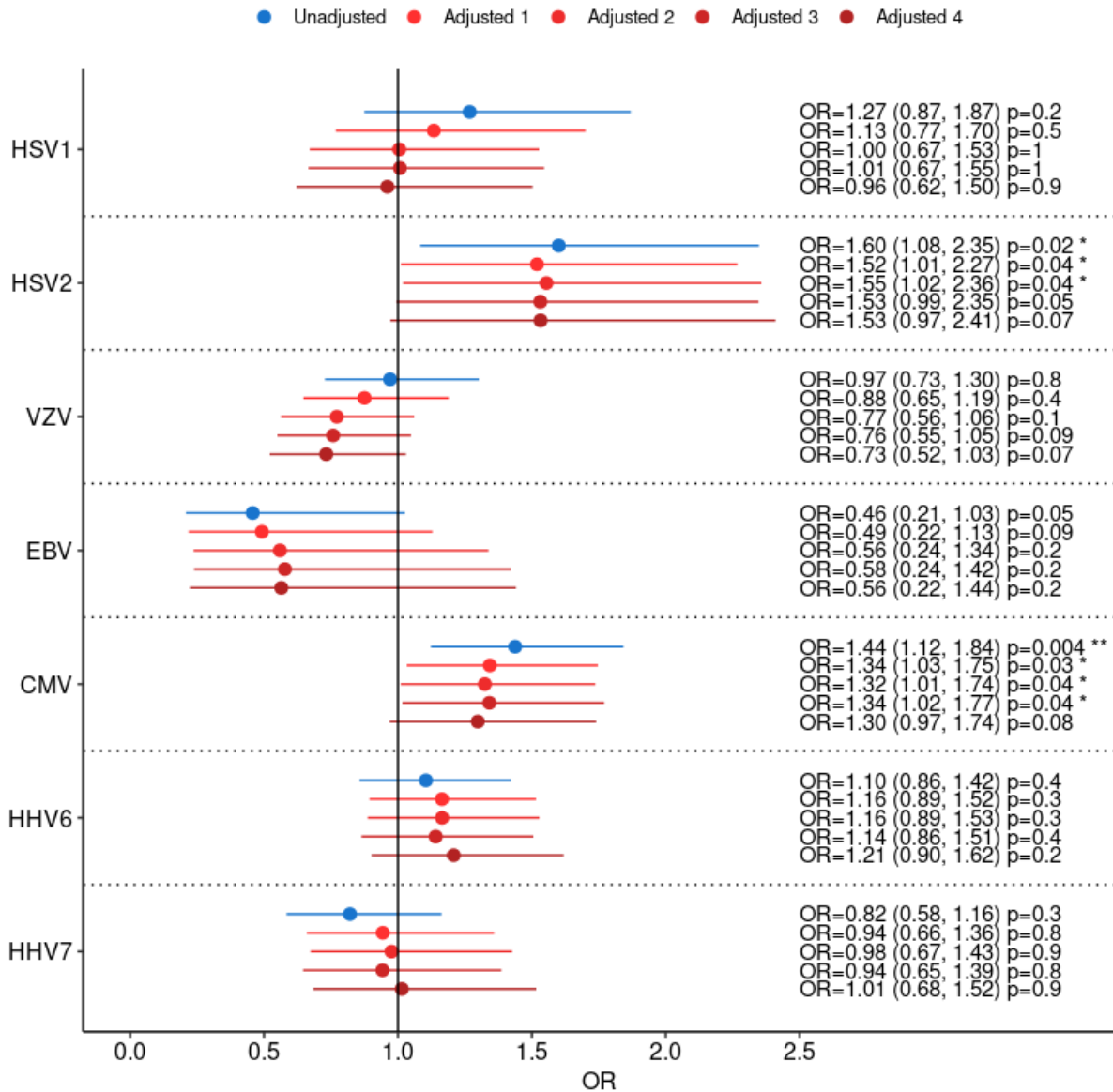
ESM Figure 27: Contingency table and contribution of individual covariates for the association of CMV with (pre)diabetes incidence



ESM Figure 28: Contingency table and contribution of individual covariates for the association of HHV6 with (pre)diabetes incidence



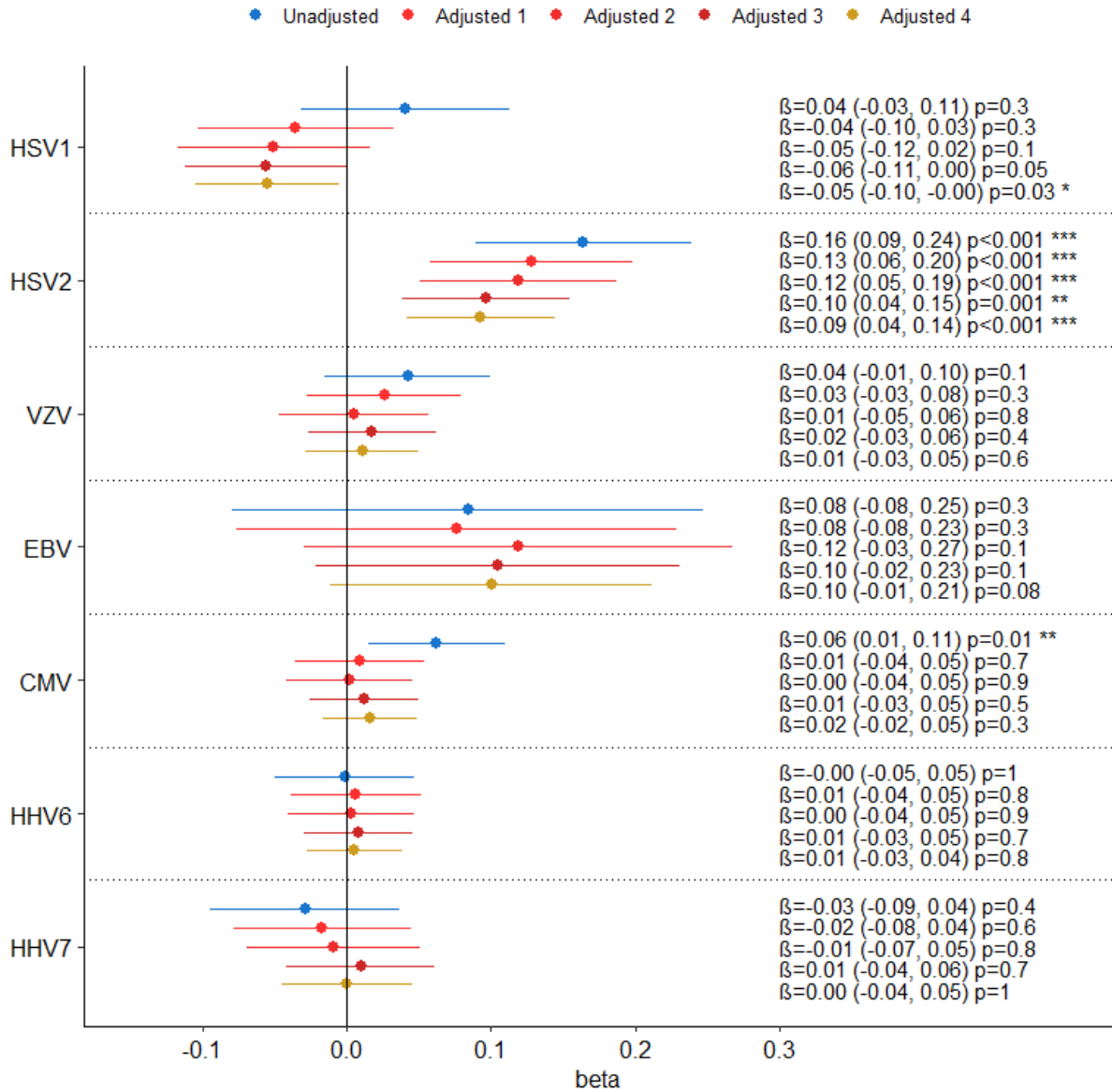
ESM Figure 29: Contingency table and contribution of individual covariates for the association of HHV7 with (pre)diabetes incidence



ESM Figure 30: Mutually adjusted associations of herpesvirus seropositivity with incidence of (pre)diabetes (n=1257, 95% CI in brackets)

Results are presented for unadjusted models and for models adjusted for:

- 1) sex, age
- 2) adjusted 1 plus BMI, education, smoking, physical activity
- 3) adjusted 2 plus parental diabetes, hypertension, triglycerides, total cholesterol/HDL, HOMA-IR
- 4) adjusted 3 plus fasting glucose



ESM Figure 31: Mutually adjusted cross-sectional association of herpesvirus serostatus with HbA1c at baseline (n=1967, 95% CI in brackets)

We report the regression coefficients (β and 95% CI) for unadjusted models and models adjusted for:

- 1) sex, age
- 2) adjusted 1 plus BMI, education, smoking, physical activity
- 3) adjusted 2 plus parental diabetes, hypertension, triglycerides, total cholesterol/HDL, HOMA-IR
- 4) adjusted 3 plus prevalence of (pre)diabetes