

Table S1. Baseline characteristics of the participants in different HPV-16 serostatus groups.

	HPV-16 Neu (-)	HPV-16 Neu (+)	HPV-16 IgG (-)	HPV-16 IgG (+)	HPV-16 Neu (-) IgG (-)	HPV-16 Neu (-) IgG (+)	HPV-16 Neu (+) IgG (-)	HPV-16 Neu (+) IgG (+)
N	3199	435	2560	1074	2395	804	165	270
Mean age ± SD (y)	29·9 ± 7·3	29·9 ± 7·3	30·0 ± 7·4	29·7 ± 7·3	30·0 ± 7·3	29·8 ± 7·3	30·2 ± 7·6	29·7 ± 7·1
Cytological findings at day 0, n (%) #								
Normal (NILM)	2971 (92·9)	381 (87·6)	2370 (92·6)	982 (91·4)	2221 (92·7)	750 (93·3)	149 (90·3)	232 (85·9)
Abnormal (ASC-US+)	226 (7·1)	53 (12·2)	189 (7·4)	90 (8·4)	173 (7·2)	53 (6·6)	16 (9·7)	37 (13·7)
ASC-US	148 (4·6)	35 (8·0)	129 (5·0)	54 (5·0)	119 (5·0)	29 (3·6)	10 (6·1)	25 (9·3)
HC2 (-)	93 (2·9)	16 (3·7)	81 (3·2)	28 (2·6)	78 (3·3)	15 (1·9)	3 (1·8)	13 (4·8)
HC2 (+)	55 (1·7)	19 (4·4)	48 (1·9)	26 (2·4)	41 (1·7)	14 (1·7)	7 (4·2)	12 (4·4)
LSIL	70 (2·2)	13 (3·0)	53 (2·1)	30 (2·8)	49 (2·0)	21 (2·6)	4 (2·4)	9 (3·3)
HSIL	1 (0·0)	4 (0·9)	2 (0·1)	3 (0·3)	1 (0·0)	0 (0)	1 (0·6)	3 (1·1)
ASC-H	5 (0·2)	1 (0·2)	4 (0·2)	2 (0·2)	3 (0·1)	2 (0·2)	1 (0·6)	0 (0)
AIS/AGC	2 (0·1)	0 (0)	1 (0·0)	1 (0·1)	1 (0·0)	1 (0·1)	0 (0)	0 (0)
Unsatisfactory	2 (0·1)	1 (0·2)	1 (0·0)	2 (0·2)	1 (0·0)	1 (0·1)	0 (0)	1 (0·4)

HPV-16 Neu (-): Seronegative for HPV-16 neutralizing antibodies; HPV-16 Neu (+): Seropositive for HPV-16 neutralizing antibodies; HPV-16 IgG (-): Seronegative for HPV-16 IgG antibodies; HPV-16 IgG (+): Seropositive for HPV-16 IgG antibodies; HPV-16 Neu (-) IgG (-): Seronegative for both HPV-16 neutralizing and IgG antibodies; HPV-16 Neu (-) IgG (+): Seronegative for HPV-16 neutralizing antibodies but seropositive for HPV-16 IgG antibodies; HPV-16 Neu (+) IgG (-): Seropositive for HPV-16 neutralizing antibodies but seronegative for HPV-16 IgG antibodies; HPV-16 Neu (+) IgG (+): Seropositive for both HPV-16 neutralizing and IgG antibodies; # NILM: negative for intraepithelial lesion or malignancy; ASC-US: Atypical squamous cells of undetermined significance; LSIL: low-grade squamous intraepithelial lesion; HSIL: high-grade squamous intraepithelial lesion; ASC-H: atypical squamous cells cannot exclude high-grade lesion; AIS: adenocarcinoma in situ; AGC: atypical glandular cells; HC2 (-): Negative on Hybrid Capture-2 test; HC2 (+): Positive on Hybrid Capture-2 test;

Table S2. Baseline characteristics of the participants in different HPV-18 serostatus groups.

	HPV-18 Neu (-)	HPV-18 Neu (+)	HPV-18 IgG (-)	HPV-18 IgG (+)	HPV-18 Neu (-) IgG (-)	HPV-18 Neu (-) IgG (+)	HPV-18 Neu (+) IgG (-)	HPV-18 Neu (+) IgG (+)
N	3458	176	3038	596	2996	462	42	134
Mean age ± SD (y)	29.9 ± 7.3	30.6 ± 7.2	29.9 ± 7.4	29.9 ± 7.1	29.9 ± 7.4	29.7 ± 7.1	31.1 ± 7.4	30.4 ± 7.1
Cytological findings at day 0, n (%) #								
Normal (NILM)	3197 (92.5)	155 (88.1)	2820 (92.8)	532 (89.3)	2782 (92.9)	415 (89.8)	38 (90.5)	117 (87.3)
Abnormal (ASC-US+)	259 (7.5)	20 (11.4)	217 (7.1)	62 (10.4)	213 (7.1)	46 (10.0)	4 (9.5)	16 (11.9)
ASC-US	165 (4.8)	18 (10.2)	144 (4.7)	39 (6.5)	140 (4.7)	25 (5.4)	4 (9.5)	14 (10.4)
HC2 (-)	100 (2.9)	9 (5.1)	92 (3.0)	17 (2.9)	90 (3.0)	10 (2.2)	2 (4.8)	7 (5.2)
HC2 (+)	65 (1.9)	9 (5.1)	52 (1.7)	22 (3.7)	50 (1.7)	15 (3.2)	2 (4.8)	7 (5.2)
LSIL	81 (2.3)	2 (1.1)	63 (2.1)	20 (3.4)	63 (2.1)	18 (3.9)	0 (0)	2 (1.5)
HSIL	5 (0.1)	0 (0)	4 (0.1)	1 (0.2)	4 (0.1)	1 (0.2)	0 (0)	0 (0)
ASC-H	6 (0.2)	0 (0)	4 (0.1)	2 (0.3)	4 (0.1)	2 (0.4)	0 (0)	0 (0)
AIS/AGC	2 (0.1)	0 (0)	2 (0.1)	0 (0)	2 (0.1)	0 (0)	0 (0)	0 (0)
Unsatisfactory	2 (0.1)	1 (0.6)	1 (0.0)	2 (0.3)	1 (0.0)	1 (0.2)	0 (0)	1 (0.7)

HPV-18 Neu (-): Seronegative for HPV-18 neutralizing antibodies; HPV-18 Neu (+): Seropositive for HPV-18 neutralizing antibodies; HPV-18 IgG (-): Seronegative for HPV-18 IgG antibodies; HPV-18 IgG (+): Seropositive for HPV-18 IgG antibodies; HPV-18 Neu (-) IgG (-): Seronegative for both HPV-18 neutralizing and IgG antibodies; HPV-18 Neu (-) IgG (+): Seronegative for HPV-18 neutralizing antibodies but seropositive for HPV-18 IgG antibodies; HPV-18 Neu (+) IgG (-): Seropositive for HPV-18 neutralizing antibodies but seronegative for HPV-18 IgG antibodies; HPV-18 Neu (+) IgG (+): Seropositive for both HPV-18 neutralizing and IgG antibodies; # NILM: negative for intraepithelial lesion or malignancy; ASC-US: Atypical squamous cells of undetermined significance; LSIL: low-grade squamous intraepithelial lesion; HSIL: high-grade squamous intraepithelial lesion; ASC-H: atypical squamous cells cannot exclude high-grade lesion; AIS: adenocarcinoma in situ; AGC: atypical glandular cells; HC2 (-): Negative on Hybrid Capture-2 test; HC2 (+): Positive on Hybrid Capture-2 test;

Table S3. The risk of newly detected HPV-16/18 infection in strata of HPV-16/18 neutralizing antibodies and IgG antibodies with different cut-off values of IgG antibodies.

HPV-16/18 serostatus *	No. of subjects	Person -years	No. of events	HPV-16/18 incidence (95% CI) per 100 person-years	Hazard ratio (95%CI)	P Value	Adjusted Hazard ratio (95% CI) #	P Value #
Endpoint: incident infection								
Cut-off (Q1): HPV-16: 4·4; HPV-18: 2·8								
Neu (-) IgG (-)	2208	11,179	190	1·70 (1·47, 1·96)	1·00	..	1·00	..
Neu (-) IgG (+)	843	4288	45	1·05 (0·78, 1·41)	0·62 (0·45, 0·86)	0·0044	0·62 (0·45, 0·86)	0·0038
Neu (+) IgG (-)	226	1147	5	0·44 (0·18, 1·05)	0·27 (0·11, 0·65)	0·0034	0·27 (0·11, 0·65)	0·0037
Neu (+) IgG (+)	285	1452	11	0·76 (0·42, 1·37)	0·45 (0·24, 0·82)	0·0095	0·45 (0·25, 0·83)	0·0099
Cut-off (Q2): HPV-16: 6·6; HPV-18: 4·0								
Neu (-) IgG (-)	2504	12,639	215	1·70 (1·49, 1·94)	1·00	..	1·00	..
Neu (-) IgG (+)	516	2660	22	0·83 (0·54, 1·26)	0·49 (0·32, 0·76)	0·0014	0·49 (0·31, 0·76)	0·0013
Neu (+) IgG (-)	288	1470	5	0·34 (0·14, 0·82)	0·21 (0·09, 0·50)	0·0005	0·21 (0·09, 0·50)	0·0005
Neu (+) IgG (+)	227	1150	11	0·96 (0·53, 1·73)	0·56 (0·31, 1·03)	0·0629	0·57 (0·31, 1·05)	0·0695
Cut-off (Q3): HPV-16: 10·1; HPV-18: 7·6								
Neu (-) IgG (-)	2751	13,898	235	1·69 (1·49, 1·92)	1·00	..	1·00	..
Neu (-) IgG (+)	242	1241	9	0·73 (0·38, 1·39)	0·43 (0·22, 0·84)	0·0134	0·44 (0·23, 0·85)	0·0148
Neu (+) IgG (-)	362	1859	6	0·32 (0·15, 0·72)	0·20 (0·09, 0·44)	<0001	0·20 (0·09, 0·45)	<0001
Neu (+) IgG (+)	146	723	10	1·38 (0·74, 2·57)	0·80 (0·43, 1·51)	0·4908	0·81 (0·43, 1·53)	0·5168
Endpoint: 6-month persistent infection								
Cut-off (Q1): HPV-16: 4·4; HPV-18: 2·8								
Neu (-) IgG (-)	2171	11,397	55	0·48 (0·37, 0·63)	1·00	..	1·00	..
Neu (-) IgG (+)	834	4349	15	0·34 (0·21, 0·57)	0·71 (0·40, 1·26)	0·2418	0·71 (0·40, 1·25)	0·2371
Neu (+) IgG (-)	221	1162	1	0·09 (0·01, 0·61)	0·18 (0·03, 1·28)	0·0866	0·18 (0·03, 1·29)	0·0879
Neu (+) IgG (+)	276	1471	1	0·07 (0·01, 0·48)	0·14 (0·02, 1·01)	0·0516	0·14 (0·02, 1·02)	0·0522
Cut-off (Q2): HPV-16: 6·6; HPV-18: 4·0								
Neu (-) IgG (-)	2462	12,889	66	0·51 (0·40, 0·65)	1·00	..	1·00	..
Neu (-) IgG (+)	513	2701	6	0·22 (0·10, 0·49)	0·43 (0·19, 1·00)	0·0491	0·43 (0·19, 1·00)	0·0492
Neu (+) IgG (-)	281	1482	1	0·07 (0·01, 0·48)	0·13 (0·02, 0·95)	0·0438	0·13 (0·02, 0·95)	0·0445
Neu (+) IgG (+)	220	1171	1	0·09 (0·01, 0·61)	0·17 (0·02, 1·20)	0·0750	0·17 (0·02, 1·22)	0·0782
Cut-off (Q3): HPV-16: 10·1; HPV-18: 7·6								
Neu (-) IgG (-)	2707	14,184	70	0·49 (0·39, 0·62)	1·00	..	1·00	..
Neu (-) IgG (+)	241	1260	3	0·24 (0·08, 0·74)	0·48 (0·15, 1·53)	0·2139	0·49 (0·15, 1·55)	0·2231
Neu (+) IgG (-)	354	1873	1	0·05 (0·01, 0·38)	0·11 (0·02, 0·78)	0·0270	0·11 (0·02, 0·79)	0·0278
Neu (+) IgG (+)	140	743	1	0·13 (0·02, 0·96)	0·27 (0·04, 1·96)	0·1969	0·28 (0·04, 2·00)	0·2026
Endpoint: 12-month persistent infection								
Cut-off (Q1): HPV-16: 4·4; HPV-18: 2·8								
Neu (-) IgG (-)	2149	11,417	39	0·34 (0·25, 0·47)	1·00	..	1·00	..
Neu (-) IgG (+)	826	4352	12	0·28 (0·16, 0·49)	0·80 (0·42, 1·53)	0·5074	0·80 (0·42, 1·53)	0·4998
Neu (+) IgG (-)	219	1160	1	0·09 (0·01, 0·61)	0·25 (0·04, 1·83)	0·1729	0·25 (0·04, 1·85)	0·1755
Neu (+) IgG (+)	273	1464	1	0·07 (0·01, 0·48)	0·20 (0·03, 1·45)	0·1108	0·20 (0·03, 1·46)	0·1119

HPV-16/18 serostatus *	No. of subjects	Person -years	No. of events	HPV-16/18 incidence (95% CI) per 100 person-years	Hazard ratio (95%CI)	P Value	Adjusted Hazard ratio (95% CI) #	P Value #
Cut-off (Q2): HPV-16: 6·6; HPV-18: 4·0								
Neu (-) IgG (-)	2437	12,923	45	0·35 (0·26, 0·47)	1·00	..	1·00	..
Neu (-) IgG (+)	508	2700	5	0·19 (0·08, 0·44)	0·53 (0·21, 1·33)	0·1767	0·53 (0·21, 1·33)	0·1774
Neu (+) IgG (-)	278	1477	1	0·07 (0·01, 0·48)	0·19 (0·03, 1·41)	0·1047	0·20 (0·03, 1·42)	0·1067
Neu (+) IgG (+)	217	1164	1	0·09 (0·01, 0·61)	0·25 (0·03, 1·78)	0·1646	0·25 (0·04, 1·83)	0·1724
Cut-off (Q3): HPV-16: 10·1; HPV-18: 7·6								
Neu (-) IgG (-)	2680	14,219	48	0·34 (0·25, 0·45)	1·00	..	1·00	..
Neu (-) IgG (+)	238	1258	3	0·24 (0·08, 0·74)	0·70 (0·22, 2·26)	0·5536	0·72 (0·22, 2·30)	0·5730
Neu (+) IgG (-)	351	1867	1	0·05 (0·01, 0·38)	0·16 (0·02, 1·15)	0·0679	0·16 (0·02, 1·16)	0·0700
Neu (+) IgG (+)	138	739	1	0·14 (0·02, 0·96)	0·40 (0·06, 2·90)	0·3640	0·41 (0·06, 2·95)	0·3744

* Neu (-) IgG (-): Seronegative for both HPV-16 neutralizing and IgG antibodies and seronegative for both HPV-18 neutralizing and IgG antibodies; Neu (-) IgG (+): Seronegative for HPV-16 neutralizing antibodies but seropositive for HPV-16 IgG antibodies and/or seronegative for HPV-18 neutralizing antibodies but seropositive for HPV-18 IgG antibodies; Neu (+) IgG (-): Seropositive for HPV-16 neutralizing antibodies but seronegative for HPV-16 IgG antibodies and/or seropositive for HPV-18 neutralizing antibodies but seronegative for HPV-18 IgG antibodies; Neu (+) IgG (+): Seropositive for both HPV-16 neutralizing and IgG antibodies and/or seropositive for both HPV-18 neutralizing and IgG antibodies. #Adjusted for continuous age at enrolment.

Table S4. The risk of newly detected HPV-18 infection according to HPV-18 serostatus.

HPV-18 serostatus*	No. of subject	Person -years	No. of events	HPV-18 incidence (95%CI) per 100 person-years	Hazard ratio (95%CI)	P Value	Adjusted Hazard ratio (95% CI) #	P Value #
Endpoint: incident infection								
Neu (-)	3358	17,281	134	0.78 (0.65, 0.92)	1.00	..	1.00	..
Neu (+)	161	837	2	0.24 (0.06, 0.96)	0.31 (0.08, 1.27)	0.1043	0.32 (0.08, 1.30)	0.1111
IgG (-)	2958	15,236	119	0.78 (0.65, 0.93)	1.00	..	1.00	..
IgG (+)	561	2881	17	0.59 (0.37, 0.95)	0.77 (0.46, 1.28)	0.3057	0.76 (0.46, 1.27)	0.2998
Neu (-) IgG (-)	2920	15,047	119	0.79 (0.66, 0.95)	1.00	..	1.00	..
Neu (-) IgG (+)	438	2235	15	0.67 (0.40, 1.11)	0.86 (0.50, 1.48)	0.5899	0.86 (0.50, 1.47)	0.5709
Neu (+) IgG (-)	38	190	0	0.00 (0.00, NA)	NA	NA	NA	NA
Neu (+) IgG (+)	123	647	2	0.31 (0.08, 1.24)	0.40 (0.10, 1.60)	0.1935	0.40 (0.10, 1.62)	0.2006
Endpoint: 6-month persistent infection								
Neu (-)	3300	17,387	35	0.20 (0.14, 0.28)	1.00	..	1.00	..
Neu (+)	158	837	0	0.00 (0.00, NA)	NA	NA	NA	NA
IgG (-)	2902	15,324	28	0.18 (0.13, 0.26)	1.00	..	1.00	..
IgG (+)	556	2900	7	0.24 (0.12, 0.51)	1.31 (0.57, 3.00)	0.5219	1.31 (0.57, 3.00)	0.5229
Neu (-) IgG (-)	2865	15,135	28	0.19 (0.13, 0.27)	1.00	..	1.00	..
Neu (-) IgG (+)	435	2252	7	0.31 (0.15, 0.65)	1.66 (0.73, 3.81)	0.2286	1.66 (0.73, 3.80)	0.2301
Neu (+) IgG (-)	37	189	0	0.00 (0.00, NA)	NA	NA	NA	NA
Neu (+) IgG (+)	121	648	0	0.00 (0.00, NA)	NA	NA	NA	NA
Endpoint: 12-month persistent infection								
Neu (-)	3267	17,379	23	0.13 (0.09, 0.20)	1.00	..	1.00	..
Neu (+)	156	833	0	0.00 (0.00, NA)	NA	NA	NA	NA
IgG (-)	2871	15,310	18	0.12 (0.07, 0.19)	1.00	..	1.00	..
IgG (+)	552	2901	5	0.17 (0.07, 0.41)	1.46 (0.54, 3.93)	0.4551	1.46 (0.54, 3.93)	0.4561
Neu (-) IgG (-)	2835	15,122	18	0.12 (0.07, 0.19)	1.00	..	1.00	..
Neu (-) IgG (+)	432	2257	5	0.22 (0.09, 0.53)	1.85 (0.69, 4.98)	0.2238	1.85 (0.69, 4.97)	0.2254
Neu (+) IgG (-)	36	188	0	0.00 (0.00, NA)	NA	NA	NA	NA
Neu (+) IgG (+)	120	645	0	0.00 (0.00, NA)	NA	NA	NA	NA

* Neu (-): Seronegative for HPV-18 neutralizing antibodies; Neu (+): Seropositive for HPV-18 neutralizing antibodies; IgG (-): Seronegative for HPV-18 IgG antibodies; IgG (+): Seropositive for HPV-18 IgG antibodies; Neu (-) IgG (-): Seronegative for both HPV-18 neutralizing and IgG antibodies; Neu (-) IgG (+): Seronegative for HPV-18 neutralizing antibodies but seropositive for HPV-18 IgG antibodies; Neu (+) IgG (-): Seropositive for HPV-18 neutralizing antibodies but seronegative for HPV-18 IgG antibodies; Neu (+) IgG (+): Seropositive for both HPV-18 neutralizing and IgG antibodies;

Adjusted for continuous age at enrolment.

NA: Not available;

1 **Table S5. The risk of newly detected HPV-16 infection according to HPV-16 IgG serostatus**
 2 **depended on different cut-off values.**

HPV-16 serostatus *	No. of subjects	Person-years	No. of events	HPV-16 incidence (95% CI) per 100 person-years	Hazard ratio (95%CI)	P Value	Adjusted Hazard ratio (95% CI) #	P Value #
Endpoint: incident infection								
Cut-off (Q1): 4·4								
HPV-16 IgG (-)	2680	13,720	149	1·09 (0·92, 1·28)	1·00	..	1·00	..
HPV-16 IgG (+)	796	4023	44	1·09 (0·81, 1·47)	1·01 (0·72, 1·42)	0·9508	1·00 (0·72, 1·41)	0·9801
Cut-off (Q2): 6·6								
HPV-16 IgG (-)	2963	15,141	167	1·11 (0·95, 1·28)	1·00	..	1·00	..
HPV-16 IgG (+)	513	2602	26	1·00 (0·68, 1·47)	0·91 (0·60, 1·37)	0·6357	0·91 (0·60, 1·37)	0·6397
Cut-off (Q3): 10·1								
HPV-16 IgG (-)	3212	16,427	179	1·09 (0·94, 1·26)	1·00	..	1·00	..
HPV-16 IgG (+)	264	1316	14	1·06 (0·63, 1·80)	0·97 (0·56, 1·67)	0·9065	0·99 (0·57, 1·70)	0·9633
Endpoint: 6-month persistent infection								
Cut-off (Q1): 4·4								
HPV-16 IgG (-)	2637	13,841	51	0·37 (0·28, 0·48)	1·00	..	1·00	..
HPV-16 IgG (+)	780	4082	10	0·24 (0·13, 0·46)	0·66 (0·34, 1·31)	0·2348	0·66 (0·34, 1·30)	0·2323
Cut-off (Q2): 6·6								
HPV-16 IgG (-)	2912	15,269	57	0·37 (0·29, 0·48)	1·00	..	1·00	..
HPV-16 IgG (+)	505	2655	4	0·15 (0·06, 0·40)	0·40 (0·15, 1·11)	0·0790	0·41 (0·15, 1·12)	0·0803
Cut-off (Q3): 10·1								
HPV-16 IgG (-)	3160	16,578	59	0·36 (0·28, 0·46)	1·00	..	1·00	..
HPV-16 IgG (+)	257	1345	2	0·15 (0·04, 0·59)	0·42 (0·10, 1·71)	0·2234	0·42 (0·10, 1·74)	0·2332
Endpoint: 12-month persistent infection								
Cut-off (Q1): 4·4								
HPV-16 IgG (-)	2612	13,859	34	0·25 (0·18, 0·34)	1·00	..	1·00	..
HPV-16 IgG (+)	770	4074	8	0·20 (0·10, 0·39)	0·80 (0·37, 1·72)	0·5657	0·80 (0·37, 1·72)	0·5647
Cut-off (Q2): 6·6								
HPV-16 IgG (-)	2885	15,288	39	0·26 (0·19, 0·35)	1·00	..	1·00	..
HPV-16 IgG (+)	497	2645	3	0·11 (0·04, 0·35)	0·44 (0·14, 1·44)	0·1750	0·44 (0·14, 1·44)	0·1757
Cut-off (Q3): 10·1								
HPV-16 IgG (-)	3130	16,594	40	0·24 (0·18, 0·33)	1·00	..	1·00	..
HPV-16 IgG (+)	252	1339	2	0·15 (0·04, 0·60)	0·62 (0·15, 2·56)	0·5060	0·62 (0·15, 2·57)	0·5110

3 * IgG (-): Seronegative for HPV-16 IgG antibodies; IgG (+): Seropositive for HPV-16 IgG antibodies;

4 # Adjusted for continuous age at enrolment.

Table S6. The risk of newly detected HPV-16 infection in strata of HPV-16 neutralizing antibodies and IgG antibodies with different cut-off values of IgG antibodies.

HPV-16 serostatus *	No. of subjects	Person-years	No. of events	HPV-16 incidence (95% CI) per 100 person-years	Hazard ratio (95% CI)	P Value	Adjusted Hazard ratio (95% CI) #	P Value #
Endpoint: incident infection								
Cut-off (Q1): 4·4								
Neu (-) IgG (-)	2498	12,794	144	1·13 (0·96, 1·33)	1·00	..	1·00	..
Neu (-) IgG (+)	602	3061	34	1·11 (0·79, 1·55)	0·99 (0·68, 1·44)	0·9712	0·99 (0·68, 1·43)	0·9382
Neu (+) IgG (-)	182	926	5	0·54 (0·22, 1·30)	0·50 (0·21, 1·22)	0·1267	0·51 (0·21, 1·23)	0·1332
Neu (+) IgG (+)	194	961	10	1·04 (0·56, 1·93)	0·93 (0·49, 1·76)	0·8203	0·93 (0·49, 1·77)	0·8264
Cut-off (Q2): 6·6								
Neu (-) IgG (-)	2735	13,978	162	1·16 (0·99, 1·35)	1·00	..	1·00	..
Neu (-) IgG (+)	365	1876	16	0·85 (0·52, 1·39)	0·74 (0·44, 1·24)	0·2489	0·74 (0·44, 1·23)	0·2459
Neu (+) IgG (-)	228	1162	5	0·43 (0·18, 1·03)	0·39 (0·16, 0·94)	0·0360	0·39 (0·16, 0·95)	0·0373
Neu (+) IgG (+)	148	726	10	1·38 (0·74, 2·56)	1·18 (0·62, 2·24)	0·6073	1·20 (0·63, 2·27)	0·5838
Cut-off (Q3): 10·1								
Neu (-) IgG (-)	2932	14,996	173	1·15 (0·99, 1·34)	1·00	..	1·00	..
Neu (-) IgG (+)	168	859	5	0·58 (0·24, 1·40)	0·51 (0·21, 1·23)	0·1326	0·52 (0·21, 1·26)	0·1453
Neu (+) IgG (-)	280	1431	6	0·42 (0·19, 0·93)	0·38 (0·17, 0·85)	0·0186	0·38 (0·17, 0·86)	0·0194
Neu (+) IgG (+)	96	457	9	1·97 (1·03, 3·79)	1·67 (0·86, 3·27)	0·1325	1·71 (0·87, 3·33)	0·1191
Endpoint: 6-month persistent infection								
Cut-off (Q1): 4·4								
Neu (-) IgG (-)	2460	12,905	50	0·39 (0·29, 0·51)	1·00	..	1·00	..
Neu (-) IgG (+)	594	3099	9	0·29 (0·15, 0·56)	0·75 (0·37, 1·52)	0·4201	0·74 (0·37, 1·51)	0·4143
Neu (+) IgG (-)	177	936	1	0·11 (0·02, 0·76)	0·27 (0·04, 1·99)	0·2005	0·28 (0·04, 2·01)	0·2040
Neu (+) IgG (+)	186	983	1	0·10 (0·01, 0·72)	0·26 (0·04, 1·89)	0·1843	0·26 (0·04, 1·91)	0·1862
Cut-off (Q2): 6·6								
Neu (-) IgG (-)	2691	14,099	56	0·40 (0·31, 0·52)	1·00	..	1·00	..
Neu (-) IgG (+)	363	1905	3	0·16 (0·05, 0·49)	0·40 (0·12, 1·26)	0·1176	0·40 (0·12, 1·27)	0·1180
Neu (+) IgG (-)	221	1170	1	0·09 (0·01, 0·61)	0·21 (0·03, 1·55)	0·1267	0·22 (0·03, 1·56)	0·1281
Neu (+) IgG (+)	142	750	1	0·13 (0·02, 0·95)	0·34 (0·05, 2·42)	0·2790	0·34 (0·05, 2·46)	0·2847
Cut-off (Q3): 10·1								
Neu (-) IgG (-)	2887	15,134	58	0·38 (0·30, 0·50)	1·00	..	1·00	..
Neu (-) IgG (+)	167	870	1	0·11 (0·02, 0·82)	0·30 (0·04, 2·15)	0·2304	0·30 (0·04, 2·19)	0·2370
Neu (+) IgG (-)	273	1444	1	0·07 (0·01, 0·49)	0·18 (0·03, 1·30)	0·0889	0·18 (0·03, 1·31)	0·0899
Neu (+) IgG (+)	90	476	1	0·21 (0·03, 1·49)	0·55 (0·08, 3·97)	0·5528	0·56 (0·08, 4·05)	0·5662
Endpoint: 12-month persistent infection								
Cut-off (Q1): 4·4								
Neu (-) IgG (-)	2436	12,923	33	0·26 (0·18, 0·36)	1·00	..	1·00	..
Neu (-) IgG (+)	587	3098	7	0·23 (0·11, 0·47)	0·88 (0·39, 1·99)	0·7629	0·88 (0·39, 1·99)	0·7610
Neu (+) IgG (-)	176	935	1	0·11 (0·02, 0·76)	0·42 (0·06, 3·05)	0·3893	0·42 (0·06, 3·06)	0·3910
Neu (+) IgG (+)	183	976	1	0·10 (0·01, 0·73)	0·40 (0·06, 2·92)	0·3665	0·40 (0·06, 2·93)	0·3675

HPV-16 serostatus *	No. of subjects	Person-years	No. of events	HPV-16 incidence (95% CI) per 100 person-years	Hazard ratio (95% CI)	P Value	Adjusted Hazard ratio (95% CI) #	P Value #
Cut-off (Q2): 6·6								
Neu (-) IgG (-)	2665	14,119	38	0·27 (0·20, 0·37)	1·00	..	1·00	..
Neu (-) IgG (+)	358	1902	2	0·11 (0·03, 0·42)	0·39 (0·09, 1·62)	0·1939	0·39 (0·09, 1·62)	0·1941
Neu (+) IgG (-)	220	1169	1	0·09 (0·01, 0·61)	0·32 (0·04, 2·31)	0·2567	0·32 (0·04, 2·31)	0·2574
Neu (+) IgG (+)	139	743	1	0·13 (0·02, 0·96)	0·50 (0·07, 3·64)	0·4928	0·50 (0·07, 3·65)	0·4953
Cut-off (Q3): 10·1								
Neu (-) IgG (-)	2859	15,155	39	0·26 (0·19, 0·35)	1·00	..	1·00	..
Neu (-) IgG (+)	164	867	1	0·12 (0·02, 0·82)	0·45 (0·06, 3·25)	0·4252	0·45 (0·06, 3·26)	0·4281
Neu (+) IgG (-)	271	1439	1	0·07 (0·01, 0·49)	0·27 (0·04, 1·96)	0·1947	0·27 (0·04, 1·96)	0·1953
Neu (+) IgG (+)	88	472	1	0·21 (0·03, 1·50)	0·82 (0·11, 5·99)	0·8468	0·83 (0·11, 6·02)	0·8510

* Neu (-) IgG (-): Seronegative for both HPV-16 neutralizing and IgG antibodies; Neu (-) IgG (+): Seronegative for HPV-16 neutralizing antibodies but seropositive for HPV-16 IgG antibodies; Neu (+) IgG (-): Seropositive for HPV-16 neutralizing antibodies but seronegative for HPV-16 IgG antibodies; Neu (+) IgG (+): Seropositive for both HPV-16 neutralizing and IgG antibodies.

Adjusted for continuous age at enrolment.

Table S7. The risk of newly detected HPV-52 infection according to HPV-16/18 serostatus.

HPV-16/18 serostatus*	No. of Participants	Person-years	No. of events	HPV-52 incidence (95%CI) per 100 person-years	Hazard ratio (95%CI)	P Value	Adjusted Hazard ratio (95% CI) [#]	P Value [#]
Endpoint: HPV-52 incident infection								
HPV-16/18 Neu (-)	2894	14,593	249	1.71 (1.51, 1.93)	1.00	..	1.00	..
HPV-16/18 Neu (+)	495	2399	58	2.42 (1.87, 3.13)	1.43 (1.07, 1.90)	0.0145	1.44 (1.08, 1.91)	0.0132
HPV-16/18 IgG (-)	2117	10,653	199	1.87 (1.63, 2.15)	1.00	..	1.00	..
HPV-16/18 IgG (+)	1272	6339	108	1.70 (1.41, 2.06)	0.92 (0.73, 1.16)	0.4890	0.91 (0.72, 1.15)	0.4481
HPV-16/18 Neu (-) IgG (-)	1963	9925	176	1.77 (1.53, 2.06)	1.00	..	1.00	..
HPV-16/18 Neu (-) IgG (+)	1025	5103	85	1.67 (1.35, 2.06)	0.95 (0.74, 1.23)	0.7100	0.94 (0.73, 1.22)	0.6550
HPV-16/18 Neu (+) IgG (-)	184	877	25	2.85 (1.93, 4.22)	1.67 (1.10, 2.54)	0.0169	1.68 (1.11, 2.56)	0.0149
HPV-16/18 Neu (+) IgG (+)	323	1584	34	2.15 (1.53, 3.00)	1.21 (0.84, 1.75)	0.3057	1.21 (0.84, 1.75)	0.3071
Endpoint: 6-month persistent HPV-52 infection								
HPV-16/18 Neu (-)	2854	14,794	92	0.62 (0.51, 0.76)	1.00	..	1.00	..
HPV-16/18 Neu (+)	479	2465	20	0.81 (0.52, 1.26)	1.30 (0.80, 2.10)	0.2927	1.30 (0.80, 2.11)	0.2904
HPV-16/18 IgG (-)	2082	10,794	74	0.69 (0.55, 0.86)	1.00	..	1.00	..
HPV-16/18 IgG (+)	1251	6465	38	0.59 (0.43, 0.81)	0.85 (0.58, 1.26)	0.4250	0.85 (0.58, 1.26)	0.4210
HPV-16/18 Neu (-) IgG (-)	1933	10,050	65	0.65 (0.51, 0.82)	1.00	..	1.00	..
HPV-16/18 Neu (-) IgG (+)	1013	5206	32	0.61 (0.43, 0.87)	0.94 (0.62, 1.44)	0.7844	0.94 (0.62, 1.44)	0.7758
HPV-16/18 Neu (+) IgG (-)	179	896	10	1.12 (0.60, 2.07)	1.69 (0.87, 3.29)	0.1215	1.70 (0.87, 3.30)	0.1196
HPV-16/18 Neu (+) IgG (+)	312	1630	11	0.67 (0.37, 1.22)	1.04 (0.55, 1.97)	0.9055	1.04 (0.55, 1.97)	0.9036
Endpoint: 12-month persistent HPV-52 infection								
HPV-16/18 Neu (-)	2825	14,820	73	0.49 (0.39, 0.62)	1.00	..	1.00	..
HPV-16/18 Neu (+)	475	2487	13	0.52 (0.30, 0.90)	1.06 (0.59, 1.91)	0.8568	1.06 (0.59, 1.91)	0.8455

HPV-16/18 serostatus*	No. of Participants	Person-years	No. of events	HPV-52 incidence (95% CI) per 100 person-years	Hazard ratio (95% CI)	P Value	Adjusted Hazard ratio (95% CI) #	P Value #
HPV-16/18 IgG (-)	2063	10,837	55	0.51 (0.39, 0.66)	1.00	..	1.00	..
HPV-16/18 IgG (+)	1237	6469	31	0.48 (0.34, 0.68)	0.94 (0.61, 1.46)	0.7864	0.94 (0.60, 1.45)	0.7700
HPV-16/18 Neu (-) IgG (-)	1915	10,077	50	0.50 (0.38, 0.65)	1.00	..	1.00	..
HPV-16/18 Neu (-) IgG (+)	1002	5216	26	0.50 (0.34, 0.73)	1.00 (0.62, 1.60)	0.9953	0.99 (0.62, 1.59)	0.9735
HPV-16/18 Neu (+) IgG (-)	178	917	5	0.55 (0.23, 1.31)	1.08 (0.43, 2.71)	0.8671	1.09 (0.43, 2.73)	0.8551
HPV-16/18 Neu (+) IgG (+)	309	1635	8	0.49 (0.24, 0.98)	0.98 (0.47, 2.08)	0.9664	0.99 (0.47, 2.08)	0.9722

* HPV16/18 Neu (-): Seronegative for both HPV-16 and HPV-18 neutralizing antibodies; HPV16/18 Neu (+): Seropositive for HPV-16 and/or HPV-18 neutralizing antibodies; HPV16/18 IgG (-): Seronegative for both HPV-16 and HPV-18 IgG antibodies; HPV16/18 IgG (+): Seropositive for HPV-16 and/or HPV-18 IgG antibodies; HPV16/18 Neu (-) IgG (-): Seronegative for both HPV-16 neutralizing and IgG antibodies and seronegative for both HPV-18 neutralizing and IgG antibodies; HPV16/18 Neu (-) IgG (+): Seronegative for HPV-16 neutralizing antibodies but seropositive for HPV-16 IgG antibodies and/or seronegative for HPV-18 neutralizing antibodies but seropositive for HPV-18 IgG antibodies; HPV16/18 Neu (+) IgG (-): Seropositive for HPV-16 neutralizing antibodies but seronegative for HPV-16 IgG antibodies and/or seropositive for HPV-18 neutralizing antibodies but seronegative for HPV-18 IgG antibodies; HPV16/18 Neu (+) IgG (+): Seropositive for both HPV-16 neutralizing and IgG antibodies and/or seropositive for both HPV-18 neutralizing and IgG antibodies;

Adjusted for continuous age at enrolment.

NA: Not available;