

Supplementary Table 1. Study-specific and pooled fully adjusted odds ratios for the associations between serological markers and esophageal squamous cell carcinoma*

Marker and study	No. of seropositive case subjects/ Total no. of case subjects (%)	No. of seropositive control subjects/ Total no. of control subjects (%)	Fully adjusted OR (95% CI)	% Weight	<i>P</i>	<i>P</i> _{heterogeneity} †
HPV16 L1						
South Africa	146/697 (21.0)	210/1110 (18.9)	1.20 (0.92 to 1.55)	63.2	.18	
Australia	17/211 (8.1)	22/424 (5.2)	1.89 (0.92 to 3.89)	8.3	.085	
Central and Eastern Europe	7/157 (4.5)	24/314 (7.6)	0.45 (0.15 to 1.32)	3.8	.15	
Brazil	17/157 (10.8)	36/314 (11.5)	0.95 (0.44 to 2.03)	7.4	.89	
Iran	38/220 (17.3)	29/221 (13.1)	1.60 (0.88 to 2.92)	12.0	.13	
China	10/119 (8.4)	12/119 (10.1)	0.84 (0.34 to 2.07)	5.3	.70	
Overall	235/1561 (15.1)	333/2502 (13.3)	1.20 (0.97 to 1.47)	100.0	.092	.26
HPV16 E6						
South Africa	16/697 (2.3)	16/1110 (1.4)	1.81 (0.85 to 3.89)	52.4	.13	
Australia	9/211 (4.3)	5/424 (1.2)	3.26 (0.95 to 11.17)	20.2	.060	
Central and Eastern Europe	1/157 (0.6)	7/314 (2.2)	0.76 (0.08 to 6.96)	6.2	.81	
Brazil	3/157 (1.9)	7/314 (2.2)	0.77 (0.13 to 4.57)	9.7	.78	
Iran	4/220 (1.8)	2/221 (0.9)	5.35 (0.73 to 39.14)	7.7	.099	
China	1/119 (0.8)	1/119 (0.8)	1.04 (0.06 to 17.61)	3.8	.98	
Overall	34/1561 (2.2)	38/2502 (1.5)	1.89 (1.09 to 3.29)	100.0	.023	.61
HPV16 E7						
South Africa	9/697 (1.3)	24/1110 (2.2)	0.56 (0.24 to 1.31)	46.7	.18	
Australia	3/211 (1.4)	5/424 (1.2)	1.45 (0.30 to 7.10)	13.5	.64	
Central and Eastern Europe	4/157 (2.5)	5/314 (1.6)	2.43 (0.51 to 11.62)	13.8	.27	
Brazil	2/157 (1.3)	11/314 (3.5)	0.36 (0.07 to 1.94)	12.1	.24	
Iran	3/220 (1.4)	3/221 (1.4)	0.57 (0.10 to 3.26)	11.0	.52	
China	3/119 (2.5)	1/119 (0.8)	16.73 (0.55 to 512.24)	2.9	.11	
Overall	24/1561 (1.5)	49/2502 (2.0)	0.82 (0.46 to 1.46)	100.0	.50	.21
HPV16 E6 and/or E7						
South Africa	23/697 (3.3)	40/1110 (3.6)	0.94 (0.53 to 1.66)	49.9	.83	
Australia	11/211 (5.2)	10/424 (2.4)	2.24 (0.85 to 5.92)	17.3	.10	
Central and Eastern Europe	5/157 (3.2)	11/314 (3.5)	1.69 (0.49 to 5.81)	10.6	.41	
Brazil	4/157 (2.5)	17/314 (5.4)	0.35 (0.09 to 1.27)	9.6	.11	
Iran	7/220 (3.2)	5/221 (2.3)	1.60 (0.43 to 6.00)	9.3	.49	
China	4/119 (3.4)	2/119 (1.7)	4.01 (0.44 to 36.73)	3.3	.22	
Overall	54/1561 (3.5)	85/2502 (3.4)	1.16 (0.78 to 1.74)	100.0	.46	.19
HPV16 E6 and E7‡						
South Africa	2/697 (0.3)	0/1110 (0.0)	undefined	n/a		
Australia	1/211 (0.5)	0/424 (0.0)	undefined	n/a		
Central and Eastern Europe	0/157 (0.0)	1/314 (0.3)	undefined	n/a		
Brazil	1/157 (0.6)	1/314 (0.3)	10.84 (0.61 to 194.12)	n/a	.11	
Iran	0/220 (0.0)	0/221 (0.0)	undefined	n/a		
China	0/119 (0.0)	0/119 (0.0)	undefined	n/a		
Overall	4/1561 (0.3)	2/2502 (0.1)	5.57 (0.90 to 34.35)	100.0	.064	n/a
HPV31 L1						
South Africa	70/697 (10.0)	127/1110 (11.4)	0.92 (0.66 to 1.29)	58.0	.64	

Australia	9/211 (4.3)	32/424 (7.6)	0.82 (0.36 to 1.87)	9.7	.64	
Central and Eastern Europe	5/157 (3.2)	9/314 (2.9)	2.54 (0.57 to 11.26)	2.9	.22	
Brazil	14/157 (8.9)	32/314 (10.2)	1.09 (0.47 to 2.48)	9.5	.85	
Iran	29/220 (13.2)	26/221 (11.8)	1.22 (0.64 to 2.34)	15.6	.54	
China	5/119 (4.2)	11/119 (9.2)	0.49 (0.14 to 1.71)	4.2	.27	
Overall	132/1561 (8.5)	237/2502 (9.5)	0.97 (0.75 to 1.25)	100.0	.82	.62

HPV31 E6‡

South Africa	14/697 (2.0)	20/1110 (1.8)	1.32 (0.62 to 2.82)	n/a	.47	
Australia	2/211 (0.9)	4/424 (0.9)	1.27 (0.21 to 7.84)	n/a	.79	
Central and Eastern Europe	2/157 (1.3)	0/314 (0.0)	undefined	n/a		
Brazil	1/157 (0.6)	5/314 (1.6)	0.46 (0.04 to 5.33)	n/a	.54	
Iran	2/220 (0.9)	4/221 (1.8)	0.52 (0.07 to 3.91)	n/a	.53	
China	1/119 (0.8)	1/119 (0.8)	3.98 (0.19 to 84.43)	n/a	.38	
Overall	22/1561 (1.4)	34/2502 (1.4)	1.18 (0.66 to 2.10)	100.0	.58	n/a

HPV33 L1

South Africa	77/697 (11.1)	114/1110 (10.3)	1.27 (0.91 to 1.78)	59.7	.16	
Australia	14/211 (6.6)	20/424 (4.7)	1.86 (0.86 to 4.04)	11.4	.11	
Central and Eastern Europe	4/157 (2.5)	8/314 (2.5)	2.03 (0.47 to 8.84)	3.1	.35	
Brazil	11/157 (7.0)	21/314 (6.7)	0.90 (0.35 to 2.31)	7.6	.82	
Iran	24/220 (10.9)	20/221 (9.1)	1.45 (0.70 to 3.01)	12.8	.31	
China	6/119 (5.0)	8/119 (6.7)	0.80 (0.26 to 2.47)	5.4	.70	
Overall	136/1561 (8.7)	191/2502 (7.6)	1.30 (1.00 to 1.69)	100.0	.047	.76

HPV33 E6‡

South Africa	5/697 (0.7)	3/1110 (0.3)	3.29 (0.75 to 14.48)	n/a	.12	
Australia	2/211 (0.9)	0/424 (0.0)	undefined	n/a		
Central and Eastern Europe	0/157 (0.0)	1/314 (0.3)	undefined	n/a		
Brazil	1/157 (0.6)	1/314 (0.3)	1.45 (0.07 to 28.33)	n/a	.81	
Iran	0/220 (0.0)	0/221 (0.0)	undefined	n/a		
China	0/119 (0.0)	0/119 (0.0)	undefined	n/a		
Overall	8/1561 (0.5)	5/2502 (0.2)	2.76 (0.86 to 8.82)	100.0	.087	n/a

HPV35 L1

South Africa	77/697 (11.1)	143/1110 (12.9)	0.91 (0.66 to 1.25)	57.9	.56	
Australia	10/211 (4.7)	25/424 (5.9)	1.10 (0.49 to 2.46)	9.1	.81	
Central and Eastern Europe	9/157 (5.7)	16/314 (5.1)	1.05 (0.34 to 3.26)	4.6	.93	
Brazil	14/157 (8.9)	39/314 (12.4)	1.10 (0.50 to 2.41)	9.6	.81	
Iran	23/220 (10.4)	24/221 (10.9)	0.97 (0.50 to 1.88)	13.6	.93	
China	9/119 (7.6)	9/119 (7.6)	1.14 (0.40 to 3.28)	5.3	.81	
Overall	142/1561 (9.1)	256/2502 (10.2)	0.97 (0.76 to 1.23)	100.0	.80	.99

HPV35 E6‡

South Africa	11/697 (1.6)	11/1110 (1.0)	1.22 (0.50 to 2.95)	n/a	.66	
Australia	4/211 (1.9)	1/424 (0.2)	4.38 (0.45 to 43.01)	n/a	.20	
Central and Eastern Europe	1/157 (0.6)	2/314 (0.6)	4.25 (0.20 to 92.23)	n/a	.36	
Brazil	1/157 (0.6)	0/314 (0.0)	undefined	n/a		
Iran	1/220 (0.4)	1/221 (0.4)	0.86 (0.03 to 28.58)	n/a	.93	
China	0/119 (0.0)	1/119 (0.8)	undefined	n/a		
Overall	18/1561 (1.1)	16/2502 (0.6)	1.49 (0.73 to 3.05)	100.0	.27	n/a

HPV52 L1

South Africa	77/697 (11.1)	130/1110 (11.7)	1.01 (0.73 to 1.40)	60.8	.96	
Australia	8/211 (3.8)	12/424 (2.8)	1.59 (0.58 to 4.33)	6.5	.37	
Central and Eastern Europe	2/157 (1.3)	11/314 (3.5)	0.57 (0.10 to 3.42)	2.0	.54	
Brazil	13/157 (8.3)	27/314 (8.6)	1.68 (0.69 to 4.06)	8.3	.25	
Iran	31/220 (14.1)	26/221 (11.8)	1.40 (0.75 to 2.64)	16.4	.29	
China	6/119 (5.0)	11/119 (9.2)	0.58 (0.20 to 1.64)	6.0	.30	
Overall	137/1561 (8.8)	217/2502 (8.7)	1.09 (0.85 to 1.41)	100.0	.49	.52

HPV52 E6‡

South Africa	4/697 (0.6)	2/1110 (0.2)	3.63 (0.61 to 21.49)	n/a	.16	
Australia	0/211 (0.0)	1/424 (0.2)	undefined	n/a		
Central and Eastern Europe	1/157 (0.6)	0/314 (0.0)	undefined	n/a		
Brazil	0/157 (0.0)	0/314 (0.0)	undefined	n/a		
Iran	1/220 (0.4)	0/221 (0.0)	undefined	n/a		
China	0/119 (0.0)	0/119 (0.0)	undefined	n/a		
Overall	6/1561 (0.4)	3/2502 (0.1)	3.92 (0.92 to 16.74)	100.0	.065	n/a

HPV58 L1

South Africa	61/697 (8.8)	106/1110 (9.6)	1.06 (0.74 to 1.51)	52.0	.77	
Australia	10/211 (4.7)	9/424 (2.1)	2.71 (1.02 to 7.19)	7.1	.045	
Central and Eastern Europe	6/157 (3.8)	9/314 (2.9)	2.25 (0.46 to 10.94)	2.7	.32	
Brazil	16/157 (10.2)	30/314 (9.6)	0.95 (0.44 to 2.07)	11.2	.90	
Iran	27/220 (12.3)	29/221 (13.1)	1.14 (0.60 to 2.14)	16.7	.70	
China	13/119 (10.9)	13/119 (10.9)	0.92 (0.41 to 2.08)	10.2	.85	
Overall	133/1561 (8.5)	196/2502 (7.8)	1.14 (0.88 to 1.47)	100.0	.33	.50

HPV58 E6‡

South Africa	6/697 (0.9)	7/1110 (0.6)	0.92 (0.29 to 2.92)	n/a	.89	
Australia	1/211 (0.5)	4/424 (0.9)	0.48 (0.04 to 5.60)	n/a	.56	
Central and Eastern Europe	1/157 (0.6)	1/314 (0.3)	18.70 (0.98 to 355.59)	n/a	.051	
Brazil	1/157 (0.6)	0/314 (0.0)	undefined	n/a		
Iran	1/220 (0.4)	0/221 (0.0)	undefined	n/a		
China	0/119 (0.0)	0/119 (0.0)	undefined	n/a		
Overall	10/1561 (0.6)	12/2502 (0.5)	1.23 (0.50 to 3.05)	100.0	.65	n/a

HPV18 L1

South Africa	288/697 (41.3)	390/1110 (35.1)	1.39 (1.12 to 1.73)	23.3	.0033	
Australia	59/211 (28.0)	66/424 (15.6)	2.48 (1.60 to 3.86)	17.3	<.001	
Central and Eastern Europe	32/157 (20.4)	70/314 (22.3)	1.26 (0.71 to 2.24)	14.1	.42	
Brazil	62/157 (39.5)	111/314 (35.3)	1.27 (0.78 to 2.07)	16.0	.34	
Iran	79/220 (35.9)	75/221 (33.9)	1.07 (0.69 to 1.66)	17.3	.77	
China	26/119 (21.9)	37/119 (31.1)	0.55 (0.28 to 1.07)	11.9	.080	
Overall	546/1561 (35.0)	749/2502 (29.9)	1.28 (0.93 to 1.75)	100.0	.13	.0085

HPV18 E6‡

South Africa	14/697 (2.0)	16/1110 (1.4)	1.50 (0.70 to 3.25)	n/a	.30	
Australia	3/211 (1.4)	3/424 (0.7)	2.84 (0.47 to 17.15)	n/a	.25	
Central and Eastern Europe	2/157 (1.3)	1/314 (0.3)	6.55 (0.52 to 83.36)	n/a	.15	
Brazil	3/157 (1.9)	7/314 (2.2)	0.31 (0.05 to 1.77)	n/a	.19	
Iran	4/220 (1.8)	4/221 (1.8)	0.99 (0.23 to 4.31)	n/a	.99	
China	0/119 (0.0)	1/119 (0.8)	undefined	n/a		

Overall	26/1561 (1.7)	32/2502 (1.3)	1.24 (0.70 to 2.18)	100.0	.46	n/a
HPV18 E7‡						
South Africa	9/697 (1.3)	10/1110 (0.9)	1.21 (0.46 to 3.19)	n/a	.71	
Australia	0/211 (0.0)	0/424 (0.0)	undefined	n/a		
Central and Eastern Europe	1/157 (0.6)	4/314 (1.3)	0.38 (0.03 to 4.29)	n/a	.43	
Brazil	2/157 (1.3)	0/314 (0.0)	undefined	n/a		
Iran	1/220 (0.4)	0/221 (0.0)	undefined	n/a		
China	0/119 (0.0)	0/119 (0.0)	undefined	n/a		
Overall	13/1561 (0.8)	14/2502 (0.6)	1.31 (0.58 to 2.93)	100.0	.52	n/a
HPV18 E6 and/or E7‡						
South Africa	21/697 (3.0)	25/1110 (2.3)	1.29 (0.69 to 2.43)	n/a	.42	
Australia	3/211 (1.4)	3/424 (0.7)	2.84 (0.47 to 17.15)	n/a	.25	
Central and Eastern Europe	3/157 (1.9)	5/314 (1.6)	1.34 (0.27 to 6.72)	n/a	.72	
Brazil	5/157 (3.2)	7/314 (2.2)	1.03 (0.22 to 4.72)	n/a	.97	
Iran	5/220 (2.3)	4/221 (1.8)	1.07 (0.26 to 4.48)	n/a	.92	
China	0/119 (0.0)	1/119 (0.8)	undefined	n/a		
Overall	37/1561 (2.4)	45/2502 (1.8)	1.21 (0.75 to 1.94)	100.0	0.43	n/a
HPV18 E6 and E7‡						
South Africa	2/697 (0.3)	1/1110 (0.1)	3.52 (0.31 to 39.71)	n/a	.31	
Australia	0/211 (0.0)	0/424 (0.0)	undefined	n/a		
Central and Eastern Europe	0/157 (0.0)	0/314 (0.0)	undefined	n/a		
Brazil	0/157 (0.0)	0/314 (0.0)	undefined	n/a		
Iran	0/220 (0.0)	0/221 (0.0)	undefined	n/a		
China	0/119 (0.0)	0/119 (0.0)	undefined	n/a		
Overall	2/1561 (0.1)	1/2502 (0.0)	3.52 (0.31 to 39.48)	100.0	.31	n/a
HPV45 L1						
South Africa	109/697 (15.6)	195/1110 (17.6)	0.90 (0.68 to 1.19)	60.0	.44	
Australia	7/211 (3.3)	16/424 (3.8)	1.14 (0.43 to 3.02)	5.0	.79	
Central and Eastern Europe	7/157 (4.5)	21/314 (6.7)	1.08 (0.37 to 3.18)	4.1	.89	
Brazil	16/157 (10.2)	45/314 (14.3)	0.79 (0.35 to 1.76)	7.2	.56	
Iran	42/220 (19.1)	40/221 (18.1)	1.08 (0.63 to 1.84)	16.6	.78	
China	13/119 (10.9)	18/119 (15.1)	0.69 (0.31 to 1.56)	7.1	.37	
Overall	194/1561 (12.4)	335/2502 (13.4)	0.92 (0.74 to 1.14)	100.0	.43	.94
HPV45 E6‡						
South Africa	7/697 (1.0)	5/1110 (0.4)	2.97 (0.87 to 10.11)	n/a	.081	
Australia	1/211 (0.5)	4/424 (0.9)	1.27 (0.13 to 12.25)	n/a	.83	
Central and Eastern Europe	1/157 (0.6)	0/314 (0.0)	undefined	n/a		
Brazil	1/157 (0.6)	4/314 (1.3)	0.48 (0.04 to 5.45)	n/a	.55	
Iran	1/220 (0.4)	1/221 (0.4)	1.39 (0.08 to 23.96)	n/a	.82	
China	1/119 (0.8)	1/119 (0.8)	1.01 (0.06 to 17.20)	n/a	1.00	
Overall	12/1561 (0.8)	15/2502 (0.6)	1.64 (0.72 to 3.70)	100.0	.24	n/a
HPV6 L1						
South Africa	380/697 (54.5)	508/1110 (45.8)	1.33 (1.08 to 1.63)	54.1	.007	
Australia	41/211 (19.4)	71/424 (16.8)	1.01 (0.62 to 1.63)	10.0	.98	
Central and Eastern Europe	50/157 (31.9)	76/314 (24.2)	1.18 (0.69 to 2.04)	7.9	.54	
Brazil	75/157 (47.8)	105/314 (33.4)	2.09 (1.24 to 3.51)	8.6	.0054	

Iran	100/220 (45.5)	100/221 (45.3)	0.98 (0.64 to 1.49)	13.0	.91	
China	42/119 (35.3)	59/119 (49.6)	0.65 (0.36 to 1.17)	6.5	.15	
Overall	688/1561 (44.1)	919/2502 (36.7)	1.22 (1.05 to 1.42)	100.0	.010	.054
HPV6 E6‡						
South Africa	24/697 (3.4)	16/1110 (1.4)	2.64 (1.34 to 5.21)	n/a	.0051	
Australia	3/211 (1.4)	2/424 (0.5)	3.49 (0.53 to 22.96)	n/a	.19	
Central and Eastern Europe	0/157 (0.0)	2/314 (0.6)	undefined	n/a		
Brazil	1/157 (0.6)	5/314 (1.6)	0.39 (0.04 to 3.85)	n/a	.42	
Iran	8/220 (3.6)	1/221 (0.4)	10.55 (1.15 to 97.24)	n/a	.038	
China	5/119 (4.2)	0/119 (0.0)	undefined	n/a		
Overall	41/1561 (2.6)	26/2502 (1.0)	2.53 (1.51 to 4.25)	100.0	<.001	n/a
HPV6 E7‡						
South Africa	1/697 (0.1)	2/1110 (0.2)	0.50 (0.04 to 6.16)	n/a	.59	
Australia	0/211 (0.0)	0/424 (0.0)	undefined	n/a		
Central and Eastern Europe	0/157 (0.0)	0/314 (0.0)	undefined	n/a		
Brazil	0/157 (0.0)	1/314 (0.3)	undefined	n/a		
Iran	0/220 (0.0)	0/221 (0.0)	undefined	n/a		
China	0/119 (0.0)	0/119 (0.0)	undefined	n/a		
Overall	1/1561 (0.1)	3/2502 (0.1)	0.40 (0.04 to 4.09)	100.0	.44	n/a
HPV11 L1						
South Africa	213/697 (30.6)	280/1110 (25.2)	1.23 (0.98 to 1.55)	61.0	.075	
Australia	28/211 (13.3)	24/424 (5.7)	2.49 (1.31 to 4.72)	7.8	.0052	
Central and Eastern Europe	17/157 (10.8)	34/314 (10.8)	1.00 (0.45 to 2.23)	5.0	.99	
Brazil	39/157 (24.8)	58/314 (18.5)	1.63 (0.89 to 2.96)	8.9	.11	
Iran	53/220 (24.1)	43/221 (19.5)	1.55 (0.91 to 2.63)	11.3	.11	
China	15/119 (12.6)	23/119 (19.3)	0.65 (0.31 to 1.35)	5.9	.25	
Overall	365/1561 (23.4)	462/2502 (18.5)	1.30 (1.09 to 1.56)	100.0	.0036	.11
HPV11 E6‡						
South Africa	9/697 (1.3)	6/1110 (0.5)	2.09 (0.70 to 6.21)	n/a	.18	
Australia	3/211 (1.4)	2/424 (0.5)	2.62 (0.40 to 17.42)	n/a	.32	
Central and Eastern Europe	0/157 (0.0)	0/314 (0.0)	undefined	n/a		
Brazil	1/157 (0.6)	2/314 (0.6)	1.19 (0.06 to 24.46)	n/a	.91	
Iran	0/220 (0.0)	1/221 (0.4)	undefined	n/a		
China	2/119 (1.7)	0/119 (0.0)	undefined	n/a		
Overall	15/1561 (1.0)	11/2502 (0.4)	1.99 (0.89 to 4.44)	100.0	.093	n/a
HPV11 E7‡						
South Africa	4/697 (0.6)	9/1110 (0.8)	0.51 (0.14 to 1.88)	n/a	.31	
Australia	1/211 (0.5)	3/424 (0.7)	0.96 (0.09 to 9.77)	n/a	.97	
Central and Eastern Europe	0/157 (0.0)	1/314 (0.3)	undefined	n/a		
Brazil	2/157 (1.3)	3/314 (1.0)	1.20 (0.14 to 9.94)	n/a	.87	
Iran	0/220 (0.0)	1/221 (0.4)	undefined	n/a		
China	0/119 (0.0)	0/119 (0.0)	undefined	n/a		
Overall	7/1561 (0.4)	17/2502 (0.7)	0.55 (0.22 to 1.40)	100.0	.21	n/a
HPV1 L1						
South Africa	83/697 (11.9)	147/1110 (13.2)	0.94 (0.69 to 1.29)	38.9	.71	
Australia	46/211 (21.8)	87/424 (20.5)	0.99 (0.63 to 1.54)	19.0	.96	

Central and Eastern Europe	37/157 (23.6)	49/314 (15.6)	1.58 (0.83 to 2.99)	9.2	.16	
Brazil	21/157 (13.4)	50/314 (15.9)	1.15 (0.60 to 2.20)	8.9	.67	
Iran	65/220 (29.5)	58/221 (26.2)	1.17 (0.75 to 1.85)	18.3	.49	
China	16/119 (13.4)	15/119 (12.6)	1.23 (0.55 to 2.76)	5.7	.62	
Overall	268/1561 (17.2)	406/2502 (16.2)	1.07 (0.88 to 1.30)	100.0	.48	.78

HPV4 L1

South Africa	128/697 (18.4)	208/1110 (18.7)	1.05 (0.81 to 1.37)	42.3	.70	
Australia	61/211 (28.9)	130/424 (30.7)	1.09 (0.73 to 1.63)	18.6	.68	
Central and Eastern Europe	33/157 (21.0)	75/314 (23.9)	0.86 (0.47 to 1.57)	8.3	.62	
Brazil	36/157 (22.9)	89/314 (28.3)	0.94 (0.54 to 1.64)	9.6	.83	
Iran	104/220 (47.3)	88/221 (39.8)	1.35 (0.88 to 2.07)	16.3	.17	
China	17/119 (14.3)	22/119 (18.5)	0.88 (0.40 to 1.95)	4.8	.76	
Overall	379/1561 (24.3)	612/2502 (24.5)	1.06 (0.89 to 1.26)	100.0	.48	.84

HPV49 L1

South Africa	155/697 (22.2)	234/1110 (21.1)	1.11 (0.87 to 1.43)	45.5	.39	
Australia	59/211 (28.0)	97/424 (22.9)	1.27 (0.83 to 1.92)	16.5	.27	
Central and Eastern Europe	28/157 (17.8)	57/314 (18.1)	0.87 (0.44 to 1.73)	6.1	.70	
Brazil	39/157 (24.8)	69/314 (22.0)	1.55 (0.90 to 2.69)	9.5	.12	
Iran	115/220 (52.3)	97/221 (43.9)	1.33 (0.87 to 2.03)	16.1	.18	
China	31/119 (26.0)	32/119 (26.9)	0.96 (0.50 to 1.88)	6.4	.92	
Overall	427/1561 (27.4)	586/2502 (23.4)	1.18 (1.00 to 1.40)	100.0	.055	.75

HPV77 L1

South Africa	78/697 (11.2)	124/1110 (11.2)	1.15 (0.83 to 1.60)	48.0	.40	
Australia	15/211 (7.1)	32/424 (7.6)	1.10 (0.55 to 2.18)	11.1	.79	
Central and Eastern Europe	7/157 (4.5)	28/314 (8.9)	0.51 (0.18 to 1.45)	4.8	.21	
Brazil	22/157 (14.0)	48/314 (15.3)	1.07 (0.56 to 2.01)	12.8	.85	
Iran	43/220 (19.5)	37/221 (16.7)	1.30 (0.76 to 2.24)	17.5	.34	
China	11/119 (9.2)	12/119 (10.1)	0.98 (0.38 to 2.53)	5.8	.97	
Overall	176/1561 (11.3)	281/2502 (11.2)	1.11 (0.88 to 1.39)	100.0	.39	.77

p53

South Africa	112/697 (16.1)	74/1110 (6.7)	3.01 (2.14 to 4.22)	23.4	<.001	
Australia	27/211 (12.8)	2/424 (0.5)	40.64 (9.26 to 178.38)	12.6	<.001	
Central and Eastern Europe	29/157 (18.5)	5/314 (1.6)	31.42 (6.79 to 145.35)	12.2	<.001	
Brazil	33/157 (21.0)	16/314 (5.1)	4.93 (2.33 to 10.45)	19.7	<.001	
Iran	45/220 (20.5)	11/221 (5.0)	5.75 (2.54 to 12.99)	19.1	<.001	
China	20/119 (16.8)	3/119 (2.5)	10.06 (2.41 to 41.94)	13.0	.0015	
Overall	266/1561 (17.0)	111/2502 (4.4)	8.10 (3.83 to 17.17)	100.0	<.001	<.001

JCV VP1

South Africa	486/697 (69.7)	809/1110 (72.9)	0.83 (0.66 to 1.04)	53.6	.097	
Australia	133/211 (63.0)	287/424 (67.7)	0.88 (0.60 to 1.29)	18.3	.52	
Central and Eastern Europe	116/157 (73.9)	239/314 (76.1)	0.53 (0.29 to 0.96)	7.5	.036	
Brazil	125/157 (79.6)	254/314 (80.9)	1.07 (0.59 to 1.94)	7.6	.82	
Iran	178/220 (80.9)	178/221 (80.5)	1.04 (0.60 to 1.82)	8.6	.88	
China	101/119 (84.9)	98/119 (82.3)	1.35 (0.62 to 2.91)	4.5	.45	
Overall	1139/1561 (73.0)	1865/2502 (74.5)	0.86 (0.73 to 1.01)	100.0	.072	.42

MCV VP1

South Africa	543/697 (77.9)	913/1110 (82.3)	0.81 (0.63 to 1.05)	53.0	.11	
Australia	151/211 (71.6)	326/424 (76.9)	0.85 (0.56 to 1.29)	20.1	.44	
Central and Eastern Europe	131/157 (83.4)	277/314 (88.2)	1.36 (0.63 to 2.91)	6.0	.43	
Brazil	135/157 (86.0)	261/314 (83.1)	1.51 (0.80 to 2.85)	8.7	.20	
Iran	196/220 (89.1)	201/221 (90.9)	0.77 (0.39 to 1.50)	7.8	.44	
China	105/119 (88.2)	110/119 (92.4)	0.67 (0.27 to 1.64)	4.3	.38	
Overall	1261/1561 (80.8)	2088/2502 (83.4)	0.88 (0.73 to 1.06)	100.0	.18	.41

* Linear mixed effects approach was used for pooling marker data except where indicated. All *P* values are two-sided. OR = odds ratio; CI = confidence interval; HPV = human papillomavirus; n/a = not applicable; JCV = JC virus; MCV = Merkel cell virus.

† $P_{\text{heterogeneity}} < .05$ indicates statistically significant heterogeneity among studies.

‡ Joint fixed effects approach used for pooling marker data.