TABLE. Main characteristics of studies on cost-effectiveness analysis of universal human papillomavirus vaccination, 2004–2017 (n = 21)

Author	Publication year	Country	Currency	Analysis year	Horizon (years)	Perspective	Vaccine used	Vaccine schedule	Health outcome unit	CEA threshold defined
Taira et al. [19]	2004	US	USD	2001	38	TPP	2-valent	Three doses	QALYg	50,000–100,000
Elbasha et al. [15]	2007	US	USD	2005	100	TPP	4-valent recombinant	Three doses	QALYg	No
Kulasingam et al. [8]	2007	Australia	AUD	2005	73	TPP	Bivalent	Three doses	QALYg	No
Jit et al. [12]	2008	UK	GBP	2006	100	TPP	4-valent recombinant	Three doses	QALYg	30,000
Kim et al. [20]	2009	US	USD	2006	100	SP	4-valent recombinant	Three doses	QALYg	50,000
Zechmeister et al. [13]	2009	Austria	EUR	2007	52 and 80	TPP and SP	Bivalent	Three doses	LYg	No
Olsen et al. [10]	2010	Denmark	EUR	2007	62	TPP	4-valent recombinant	Three doses	QALYg	No
Elbasha et al. [14]	2010	US	USD	2008	100	TPP	4-valent recombinant	Three doses	QALYg	50,000–100,000
Chesson et al. [16]	2011	US	USD	2008	100	SP	4-valent recombinant	Three doses	QALYg	100,000
Burger et al. [18]	2014	Norway	USD	2010	100	SP	4-valent recombinant	Three and two doses	QALYg	83,000
Laprise et al. [9]	2014	Canada	CAD	2010	70	TPP	4-valent recombinant	Three and two doses	QALYg	40,000
Pearson et al. [11]	2014	New Zealand	NZD	2011	98	TPP	4-valent recombinant	Three doses	QALYg	45,000
Bresse et al. [1]	2014	Austria	EUR	2012	100	TPP	4-valent recombinant	Three doses	QALYg	No
Blakely et al. [2]	2014	New Zealand	NZD	2011	98	TPP	4-valent recombinant	Three doses	QALYg	No
Haeussler et al. [3]	2015	Italy	EUR	2015	Long-term	TPP	4-valent recombinant	Three doses	QALYg	25,000–40,000
Jiménez et	2015	Norway	NOK	2014	100	TPP and SP	4-valent	Three doses	QALYg	215,000

al. [7]							recombinant and bivalent			
Olsen et al. [17]	2015	Denmark	EUR	2008	62 and 40	TPP	4-valent recombinant	Three and two doses	QALYg	No
Qendri et al. [5]	2017	Netherlands	EUR	2011	Lifetime	TPP	Bivalent	Two doses	LYsg	40,000
Damm et al. [4]	2017	Germany	EUR	2010	100	TPP and SP	4-valent recombinant and bivalent	Three and two doses	QALYg	50,000
Largeron et al. [21]	2017	Germany	EUR	2014	100	TPP	4-valent recombinant and 9-valent	Two doses	QALYg	40,000
Mennini et al. [6]	2017	Italy	EUR	2014	100	TPP	4-valent recombinant and 9-valent	Two doses	QALYg	25,000–40,000

References:

[1] Bresse X, Goergen C, Prager B, Joura E. Universal vaccination with the quadrivalent HPV vaccine in Austria: impact on virus circulation, public health and cost-effectiveness analysis. Expert Rev Pharmacoecon Outcomes Res. 2014;14(2):269-81.

[2] Blakely T, Kvizhinadze G, Karvonen T, Pearson AL, Smith M, Wilson N. Cost-effectiveness and equity impacts of three HPV vaccination programmes for school-aged girls in New Zealand. Vaccine. 2014;32(22):2645-56.

[3] Haeussler K, Marcellusi A, Mennini FS, Favato G, Picardo M, Garganese G, et al. Cost-Effectiveness Analysis of Universal Human Papillomavirus Vaccination Using a Dynamic Bayesian Methodology: The BEST II Study. Value Health. 2015;18(8):956-68.

[4] Damm O, Horn J, Mikolajczyk RT, Kretzschmar MEE, Kaufmann AM, Delere Y, et al. Cost-effectiveness of human papillomavirus vaccination in Germany. Cost Eff Resour Alloc. 2017;15:18.

[5] Qendri V, Bogaards JA, Berkhof J. Health and Economic Impact of a Tender-Based, Sex-Neutral Human Papillomavirus 16/18 Vaccination Program in the Netherlands. J Infect Dis. 2017;216(2):210-9.

[6] Mennini FS, Bonanni P, Bianic F, de Waure C, Baio G, Plazzotta G, et al. Cost-effectiveness analysis of the nine-valent HPV vaccine in Italy. Cost Eff Resour Alloc. 2017;15:11.

[7] Jimenez E, et al. Cost-Effectiveness of HPV-Vaccination of Boys Aged 12 in a Norwegian Setting Oslo: Norwegian Centre for the Health Services at The Norwegian Institute of Public Health (NIPH); 2015 [Available from: http://www.ncbi.nlm.nih.gov/books/NBK390581/.

[8] Kulasingam S, Connelly L, Conway E, Hocking JS, Myers E, Regan DG, et al. A cost-effectiveness analysis of adding a human papillomavirus vaccine to the Australian National Cervical Cancer Screening Program. Sex Health. 2007;4(3):165-75.

[9] Laprise JF, Drolet M, Boily MC, Jit M, Sauvageau C, Franco EL, et al. Comparing the cost-effectiveness of two- and threedose schedules of human papillomavirus vaccination: a transmission-dynamic modelling study. Vaccine. 2014;32(44):5845-53.

[10] Olsen J, Jepsen MR. Human papillomavirus transmission and cost-effectiveness of introducing quadrivalent HPV vaccination in Denmark. Int J Technol Assess Health Care. 2010;26(2):183-91.

[11] Pearson AL, Kvizhinadze G, Wilson N, Smith M, Canfell K, Blakely T. Is expanding HPV vaccination programs to include school-aged boys likely to be value-for-money: a cost-utility analysis in a country with an existing school-girl program. BMC Infect Dis. 2014;14:351.

[12] Jit M, Choi YH, Edmunds WJ. Economic evaluation of human papillomavirus vaccination in the United Kingdom. BMJ. 2008;337:a769.

[13] Zechmeister I, Blasio BF, Garnett G, Neilson AR, Siebert U. Cost-effectiveness analysis of human papillomavirusvaccination programs to prevent cervical cancer in Austria. Vaccine. 2009;27(37):5133-41.

[14] Elbasha EH, Dasbach EJ. Impact of vaccinating boys and men against HPV in the United States. Vaccine. 2010;28(42):6858-67.

[15] Elbasha EH, Dasbach EJ, Insinga RP. Model for assessing human papillomavirus vaccination strategies. Emerg Infect Dis. 2007;13(1):28-41.

[16] Chesson HW, Ekwueme DU, Saraiya M, Dunne EF, Markowitz LE. The cost-effectiveness of male HPV vaccination in the United States. Vaccine. 2011;29(46):8443-50.

[17] Olsen J, Jorgensen TR. Revisiting the cost-effectiveness of universal HPV-vaccination in Denmark accounting for all potentially vaccine preventable HPV-related diseases in males and females. Cost Eff Resour Alloc. 2015;13:4.

[18] Burger EA, Sy S, Nygard M, Kristiansen IS, Kim JJ. Prevention of HPV-related cancers in Norway: cost-effectiveness of expanding the HPV vaccination program to include pre-adolescent boys. PLoS One. 2014;9(3):e89974.

[19] Taira AV, Neukermans CP, Sanders GD. Evaluating human papillomavirus vaccination programs. Emerg Infect Dis. 2004;10(11):1915-23.

[20] Kim JJ, Goldie SJ. Cost effectiveness analysis of including boys in a human papillomavirus vaccination programme in the United States. BMJ. 2009;339:b3884.

[21] Largeron N, Petry KU, Jacob J, Bianic F, Anger D, Uhart M. An estimate of the public health impact and cost-effectiveness of universal vaccination with a 9-valent HPV vaccine in Germany. Expert Rev Pharmacoecon Outcomes Res. 2017 Feb;17(1):85-98.