Appendix Table. Input variables and sources^{a}

Input variable	Base-case estimate	Range	Source
Population starting age, y	12	0–25	Assumed
Vaccine variables			
Vaccine effectiveness, %	75	0–100	Estimate
Vaccine compliance, %	70	30–100	(1,2)
Booster shot frequency, y	10	3–lifetime	Assumed
Treatment variables			
Initial treatment efficacy, given high-grade SIL, %	95	88–97	(3–6)
Treatment efficacy (including retreat), given high-grade SIL, %	99.5	99–100	(3–7)
Probability HPV infection persists, given effective treatment of high-grade SIL	10	0–25	Assumed
Initial treatment efficacy, given low-grade SIL, %	98	93–100	(8–10)
Treatment efficacy (including retreatment), given low-grade SIL, %	99.5	99–100	(7–10)
Probability HPV infection persists, given effective treatment of low-grade SIL	10	0–25	Assumed
Surveillance variables			
Pap test sensitivity for SIL (both low- and high-grade)	51	40–80	(11,12)
Pap test specificity for SIL (both low- and high-grade)	97	95–98	(11,12)
Compliance with Pap testing, %	71	60–80	(13,14)
Pap testing frequency in unvaccinated population, months	24	12–60	(13,14)
Pap testing frequency in vaccinated population, months	24	12–60	(13,14)
HPV variables			
Prevalence of HPV in initial cohort population, %	0	0–25	(12,15)
Annual incidence of HPV infection, given woman aged (yrs):		0.5–2x	(12)
0–15	0		
15–16	0.1		
17	0.12		
18	0.15		
19	0.17		

20	0.15		
21	0.12		
22–23	0.10		
24–29	0.05		
30–49	0.01		
50+	0.005		
Proportion of high-risk HPV infections, %[a]	59	52–72	(16–19)
Annual probability (%) of HPV infection resolving, woman aged (yrs):			(12,18,20,21)
0–24	45.7	40–55	
25–29	32.9	30–37	
30+	6.8	4–10	
SIL variables			
Annual probability of SIL, given no HPV infection, %	0.025	0.02–0.03	(22–26)
Annual probability of SIL, given low-risk HPV infection, %	3.6	3–5	(12,14,22–27)
Annual probability of SIL, given high-risk HPV infections, %	6.5	5–8	(12,14,22–27)
Low-grade SIL, given no HPV infection, %	100	90–100	Assumed
Low-grade SIL, given HPV infection, %	90	80–100	(12)
Annual probability (%) of low-grade SIL regressing, given woman aged (yrs):			(27–36)
0–34	14.2	12–16	
35–44	5.8	4–8	
45+	2.7	2–8	
Probability of low-grade SIL regressing to previous state of HPV infection, given regression occurs, %	10	0–20	(12)
Annual probability (%) of high-grade SIL regressing, given woman aged (yrs):			(27,28,30,31)
0–44	5.8	3–7	

45+	3.7	3–7	
Probability of high-grade SIL regressing to well state, given regression, %	45	40–50	(12)
Probability of high-grade SIL regressing to previous state of HPV infection, given regression, %	5	0–10	Assumed
Probability of high-grade SIL regressing to low-grade SIL given regression, %	50	40–60	(12)
Annual probability (%) of developing high-grade SIL from low-grade SIL with no HPV infection, women aged (yrs):			(12,14,22–27)
0–34	0.5	0.3–0.7	
35–44	3.1	2–5	
45+	4.5	3–6	
Annual probability (%) of developing high-grade SIL from low-grade SIL when low-risk HPV infection is present, women aged (yrs):			(12,14,22–27)
0–34	0.4	0.2–0.6	
35–44	2.7	2–4	
45+	3.8	3–5	
Annual probability (%) of developing high-grade SIL from low-grade SIL when high-risk HPV infection is present, women aged (yrs):			(12,14,22–27)
0–34	2.0	1–3	
35–44	15.6	7–20	
45+	31.3	15–35	
Annual probability of developing cervical cancer, given high-grade SIL and no HPV infection, %	2.6	2–4	(12,14,22–27)
Annual probability of developing cervical cancer, given high-grade SIL developed through low-risk HPV infection, %	1.0	0.7–1.5	(12,14,22–27)
Annual probability of developing cervical cancer, given high-grade SIL developed through high-risk HPV infection, %	3.8	3–6	(12,14,22–27)
Cervical cancer variables			
Annual probability of progressing from undiagnosed Stage I cervical cancer to Stage II	43.7	40–45	(12)

cervical cancer, %			
Annual probability of progressing from undiagnosed Stage II cervical cancer to Stage III cervical cancer, %	53.5	50–55	
Annual probability of progressing from undiagnosed Stage III cervical cancer to Stage IV cervical cancer, %	68.3	65–70	
Annual probability of symptoms with undiagnosed Stage I cervical cancer, %	15	12–18	
Annual probability of symptoms with undiagnosed Stage II cervical cancer, %	22.5	20–25	
Annual probability of symptoms with undiagnosed Stage III cervical cancer, %	60	67–73	
Annual probability of symptoms with undiagnosed Stage IV cervical cancer, %	90	87–93	
Annual probability of survival after diagnosis, by stage:			(12)
Stage I			
Year 1	0.9688	0.95–0.99	
Year 2	0.9525	0.93–0.97	
Year 3	0.9544	0.93–0.97	
Year 4	0.9760	0.95–0.99	
Year 5	0.9761	0.95–0.99	
Stage II			
Year 1	0.9066	0.88–0.92	
Year 2	0.8760	0.85–0.89	
Year 3	0.9225	0.90–0.94	
Year 4	0.9332	0.91–0.95	
Year 5	0.9604	0.94–0.98	
Stage III			
Year 1	0.7064	0.68–0.72	
Year 2	0.7378	0.71–0.75	

Year 3	0.8610	0.84–0.88	
Year 4	0.9231	0.90–0.94	
Year 5	0.9142	0.89–0.93	
Stage IV			
Year 1	0.3986	0.37–0.41	
Year 2	0.4982	0.47–0.51	
Year 3	0.7638	0.74–0.78	
Year 4	0.8652	0.84–0.88	
Year 5	0.8592	0.83–0.87	
Time to remission, yrs	5		
Five-year survival after diagnosis, by stage, %			(12)
Stage I	83.9		
Stage II	65.66		
Stage III	37.87		
Stage IV	11.27		
Costs, $			
Vaccine	300	100–500	(37–40)
Booster shot	100	30–130	Assumed
Cost of treatment for cervical cancer, Stage I	14,979	11,234–18,724	(41,42)
Cost of treatment for cervical cancer, Stage II	21,811	16,358–27,264	(41,42)
Cost of treatment for cervical cancer, Stage III	21,811	16,358–27,264	(41,42)
Cost of treatment for cervical cancer, Stage IV	24,004	18,003–30,005	(41,42)
Cost of Pap test (w/10% retest)	81	61–101	(42)
Cost of treatment for high-grade SIL	1,218	914–1523	(42–45)
Cost of treatment for low-grade SIL	630	473–788	(42–45)

Cost of treatment for a false-positive SIL	230	172–288	(43,44,46)
Cost of hysterectomy	7,883	5912–9854	(11,45)
Annual probability of hysterectomy by age (yrs), %		0.25–2x	(47)
15–24	0.04		
25–29	0.35		
30–34	0.60		
35–39	0.99		
40–44	1.29		
45–54	0.99		
≥55	0.33		
Utilities			(48)
Low-grade SIL	0.97	0.8–1	
High-grade SIL	0.97	0.5–1	
Low-risk HPV infection	1.00	0.9–1	
High-risk HPV infection	1.00	0.8–1	
Cervical cancer, treatment phase			
Stage I	0.79	0.25–1	
Stages II–IV	0.62	0.25–1	
Cervical cancer, follow-up			
Stage I	0.90	0.25–1	
Stages II–IV	0.62	0.25–1	
Well	1.00		Age-specific utilities based on (49)
Other Variables			
Markov model cycle length, months	1		Assumed
Discount rate, %	3	0–5	(50)

[a]HPV, *Human papillomavirus*; SIL, squamous intraepithelial lesion. High risk HPV is defined as HPV 16, 18, 31, 33, 35, 39, 45, 51, 52, 56, 58, 59, 68; low-risk HPV is defined as all other types. All probabilities are annual unless otherwise noted. All costs are in 2001 U.S. dollars.

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