

## STD TREATMENT GUIDELINES TABLES: BURDEN

<i>Author/Citation</i>	<i>Study Design</i>	<i>Population, Sample Size</i>	<i>Outcome</i>	<i>Summary Points</i>
Jemel A, et al. 2013	Cross-sectional review of cancer registry data (NPCR and SEER)	US Population	HPV-associated Cancer incidence in the US	<p>Incidence rates increased for oropharynx and anal cancers</p> <ul style="list-style-type: none"> <li>➤ Disparities noted for HPV-associated cancer incidence rates</li> <li>➤ 34,788 new HPV-associated cancers in men, women, 2009</li> <li>➤ Anal cancer burden is 5234 total (15.6% of total HPV-associated cancers, 1934 in men and 3500 in women)</li> <li>➤ HPV-associated cancers, rates increased for cancer of the oropharynx in white men and women, for vulvar cancer in white and black women, and for anal cancer in white and black men and women.</li> </ul>
Satterwhite CW, et al. 2013	Population based assessments (where available), modeling	US Population	Prevalence and incidence of STIs (including HPV) in general population	<ul style="list-style-type: none"> <li>➤ ~79 million prevalent HPV infection and 14.1 million incident infections each year</li> <li>➤ HPV the most common STI</li> </ul>
Harshila P, et al. 2013	Systematic Review of Genital warts	World	Genital wart prevalence and incidence	<ul style="list-style-type: none"> <li>➤ 32 Studies retained</li> <li>➤ Annual incidence of AGW ranged from 160 to 289 per 100,000 and recurrence was high.</li> <li>➤ Prevalence estimates ranged between 0.13%-0.20%</li> <li>➤ Peak incidence in females &lt;24 and in males 25-29 years.</li> <li>➤ Prevalence estimates based on genital</li> </ul>

				examinations were higher than that reported based on administrative databases
Forman D, et al. 2012	Review primarily using existing peer-reviewed literature and cancer estimates from GLOBOCAN 2008	World	Global HPV prevalence, Global burden HPV-associated outcomes	<ul style="list-style-type: none"> <li>➤ HPV prevalence on average 11-12% (based on HC or PCR)—varies based on region</li> <li>➤ Relationship of HPV prevalence and age (some settings it decreases, others there is an increase in older ages)</li> <li>➤ IARC monograph 100B describes those cancer sites with strong evidence for a causal relationship and includes cervix uteri, penis, vulva, vagina, anus, oropharynx, including base of the tongue and tonsils.</li> <li>➤ A total of 610,000 cancers attributable to HPV infection worldwide, 86.9% are cervical cancers</li> <li>➤ Data on anogenital cancers other than cervical less data but appears to be increasing in the areas reported including India, Colombia, Denmark, Japan.</li> <li>➤ Cervical cancer the third most common female malignancy worldwide in 2008, after breast and large bowel cancers, and fourth most common cause of female death from cancer.</li> <li>➤ Cervical cancer was the cause of 7 Million years of life lost in women.</li> <li>➤ GW incidence similar patterns worldwide, little data from low-income settings (0.1-0.2% cases per annum)</li> </ul>
Scarborough Lefebvre CD, et al. 2011	Systematic review of available literature	US, UK and France	Cost, burden and psychosocial impact	<ul style="list-style-type: none"> <li>➤ Variety of different instruments assessing QoL—QALY weight 0.10 in Brisson et al, and Woodhall et al from 0.39-13.9 points.</li> </ul>

Senecal M, et al. 2011	Cross-sectional	270 women and men, median age 31.5 years.	Psychosocial impact of genital warts	<ul style="list-style-type: none"> <li>➤ Detriment in EQ-5D domains of anxiety/depression, pain/discomfort— differences was 9.9 and 6 percentage points using the different utility scores/health status evaluations</li> </ul>
Saraiya M, et al. 2010	National Survey data (NAMCS and NHAMCSS) 2003-2005	Women in US	National survey, 66% and 86% response rate	<ul style="list-style-type: none"> <li>➤ 30.2 million visits for Pap test in &gt;15 females</li> <li>➤ Abnormal Pap test 1.4 million visits, cervical procedures 1.7 million visits, 1.2 million visits for colposcopy</li> </ul>
Hoy T, et al. 2009	Administrative data on GW in US	US	Evaluation of Blue Cross Blue Shield health plans, over 2.1 million members with 4-year continuous eligibility between 2001-2004.	<ul style="list-style-type: none"> <li>➤ Genital warts incidence was 1.2/1000 females and 1.1/1000 males, incidence highest in females 20-24 and males 25-29.</li> <li>➤ Mean duration of episode was 95.4 day, mean no. visits was 1.5 females/1.9 males.</li> <li>➤ Mean costs were 647/episode. Estimated economic burden was \$760/1000 individuals in general population with total exceeding 220 million.</li> </ul>
Pirotta M, et al. 2009	Cross-sectional study	331 women, 18-45 years	Psychosocial burden of HPV: abnormal pap, genital warts using a validated instrument, compared to women with normal paps	<ul style="list-style-type: none"> <li>➤ Response rate 73% overall</li> <li>➤ Highest scores (higher score = increased psychosocial impact) for women with CIN2/3 (46.6), EGW (45.7)</li> <li>➤ EGW alone—impact highest on sexuality, self-image and partner and transmission</li> </ul>
Garland SM, et al. 2009	RCT post hoc analysis of placebo arm	Women followed 3.6 years, 8800 participants	Incident GW	<ul style="list-style-type: none"> <li>➤ 3.4% developed GW related to HPV 6, 11. Risk factors for development of GW were infection at baseline, acquisition of new sex partners, higher no. sex partners.</li> </ul>

### Cost/Years of Potential Life Lost (YPLL)

<b>Author/Citation</b>	<b>Study Design</b>	<b>Population, Sample Size</b>	<b>Outcome</b>	<b>Summary Points</b>
Owusu-Edusei, K, et al 2013	Direct Medical costs of STI in US	US population	Direct medical costs for HPV were 1.7 billion.	<ul style="list-style-type: none"> <li>➤ Overall medical costs from HPV in a given year is 1.7 billion, 747 million for CIN, 485 million for HPV associated cancers 288 million for GW, and 150 million for RRP</li> <li>➤ Lifetime cost per case of HPV was 45\$ for men and 191\$ for women.</li> </ul>
Chesson HW, et al 2012	Model	US population	<i>Direct</i> medical costs for HPV-associated conditions including cancers, disease, and screening	<ul style="list-style-type: none"> <li>➤ Overall annual direct medical cost burden 8 billion</li> <li>➤ Over 25,000 cases of HPV-associated cancers each year</li> </ul>
Kruzikas D, et al. 2012	Retrospective claims-based analysis to assess costs with dx and tx procedures for disease due to HPV (2001-2006)  Number of persons and costs multiplied	US population	Dx and treatment costs	<ul style="list-style-type: none"> <li>➤ 14.2 million enrollees: hysterectomy , colposcopy, LEEP, ECC, DNA testing, biopsy major contributors. Hysterectomy most expensive procedure.</li> <li>➤ Rates of HPV-related dx procedures varied— Colpo and ECC being highest, then hysterectomy, then a variety of other treatments</li> <li>➤ Median cost for Pap test was \$163 in 2006.</li> <li>➤ Biopsy was the most expensive dx procedure with cost from \$1-1600 dollars. Hysterectomy was most expensive tx with cost of 7300 per procedure</li> </ul>

Hu D, et al. 2008	Collection of lifetime cost per case estimates and using incidence to determine aggregate measure of economic burden	US population	Economic burden of non-cervical disease including RRP, anogenital warts, and non-cervical cancers, 2003	<ul style="list-style-type: none"> <li>➤ Total lifetime costs of new cases highest for anogenital warts (171) million and JORRP (82.2) million, and ranged from 7.1 million for vaginal cancer to 171 million for anogenital warts. All conditions were 418 million</li> <li>➤ No consideration of non medical direct or indirect costs—so costs could be higher.</li> </ul>
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**Burden in specific populations (anal cancer in persons with HIV infection)**

<b>Author/Citation</b>	<b>Study Design</b>	<b>Population, Sample Size</b>	<b>Outcome</b>	<b>Summary Points</b>
Legarth R, et al. 2013	Poisson regression to estimate the incidence rate ratios (IRR) of anal carcinoma	HIV-infected Danes in cohort compared to general age and gender matched population	Rate ratios of carcinoma and mortality, anal carcinoma as an ICD-10 code of C.21.0-9 ad ICD-O-e codes of M80503-80763, M81233, M99993.	<ul style="list-style-type: none"> <li>➤ The IRR of anal carcinoma among MSM compared to non-MSM was 3.0 (95% CI 1.3-7.3).</li> <li>➤ The age adjusted MRR was 3.2 comparing HIV to control. The 5 year survival after dx was 0.14.</li> <li>➤ Study showed an 80 fold increased risk of anal carcinoma in HIV-infected individuals c/w controls.</li> <li>➤ 7 fold increased risk of anal carcinoma among fathers of HIV patients compared to controls.</li> </ul>
Piketty C, et al. 2012	French hospital database on HIV standardized incidence ratios	French patients in hospital based cohort with 69 clinical centers,	Anal cancer incidence in HIV-infected, and trends in time	<ul style="list-style-type: none"> <li>➤ Incidence of anal cancer increased six-fold between pre-cART and cART periods from 8.5/100,000 PY in 1992-6, to 53.2 per 100,000 PY in 2005-8. Higher incidence rates in MSM.</li> </ul>

	calculated using data from French Cancer Registries	HIV-positive.		➤ Anal cancer more likely to occur in older patients, men (particularly MSM), patients with prior dx of AIDS, lower CD4.
Silverberg MJ, et al. 2012	Data from 13 cohort studies (US and Canada) in NA-ACCORD for 1996-2007	US/Canada	Incident anal cancer among HIV-infected MSM, HIV-infected other men, and HIV-infected women., Adjusted RR	➤ Compared to HIV-uninfected men, HIV-infected men have 26.7 rate ratio and HIV-infected MSM 80.3 RR

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