GENERAL GYNECOLOGY

The economic burden of noncervical human papillomavirus disease in the United States

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OBJECTIVE: The purpose of this study was (1) to estimate the direct medical costs of 7 major noncervical human papillomavirus (HPV)–related conditions that include genital cancers, mouth and oropharyngeal cancers, anogenital warts, and juvenile-onset recurrent respiratory papillomatosis, and (2) to approximate the economic burden of noncervical HPV disease.

STUDY DESIGN: For each condition, we synthesized the best available secondary data to produce lifetime cost per case estimates, which were expressed in present value. Using an incidence-based approach, we then applied these costs to develop an aggregate measure of economic burden.

RESULTS: The economic burden that was associated with noncervical HPV-6 –, -11–, -16 –, and -18 –related conditions in the US population in the year 2003 approximates $418 million (range, $160 million to $1.6 billion).

CONCLUSION: The economic burden of noncervical HPV disease is substantial. Analyses that assess the value of investments in HPV prevention and control programs should take into account the costs and morbidity and mortality rates that are associated with these conditions.

Key words: cost analysis, economic burden, human papillomavirus


Genital human papillomavirus (HPV) infection is the most common sexually transmitted disease in the United States. Although the majority of infections are asymptomatic or self-limited, acquisition of specific types of HPV can result in clinically significant disease.

Economic studies to date of HPV-related conditions have focused primarily on cervical cancer and its precursor lesions. There are substantially fewer cost studies of noncervical HPV–associated sequelae. In fact, a recent literature review concluded there are no studies that have examined the direct medical costs attributable to noncervical HPV–related cancers or that have assessed the economic burden of noncervical HPV disease.

The main objective of this study was (1) to estimate the direct medical costs that are associated with 7 major noncervical HPV–related diseases, which included genital cancers, mouth and oropharyngeal cancers, anogenital warts, and JORRP; and (2) to provide an aggregated measure of the economic burden of noncervical HPV–related disease.

MATERIALS AND METHODS

We focused on 7 HPV-related conditions: HPV-6– and -11–associated anogenital warts, HPV-6– and -11–associated JORRP, and HPV-16– and -18–associated noncervical genital cancers (including anus, penis, vagina, vulva) and cancers of the mouth and oropharynx.
Lifetime cost per case of noncervical HPV–related conditions

For each of the 7 conditions, we used the best available secondary data to estimate the lifetime cost per case. Because these costs are intended for use in economic evaluations, we sought to develop cost per case estimates that represent the stream of direct medical costs, which are expressed in present value, from the time of diagnosis to cure or death (henceforth referred to as “discounted lifetime cost per case”). Cost data that are used to inform estimates were identified from a literature review (Appendix). Whenever possible, we sought published discounted lifetime cost per case estimates (anogenital warts, JORRP, anal cancer),9,10,13 However, because of the paucity of available studies, especially regarding noncervical HPV-related cancers, we approximated the discounted lifetime cost per case by using the best available data and simple modeling exercises to reflect the lifetime cost stream (mouth/oropharyngeal cancer, penile cancer, vaginal cancer, and vulvar cancer).14,20 Further details of the estimation approach are provided in the disease-specific sections later in this article.

To the extent possible, data sources from the United States were used9,10,14-20 although we supplemented these data with studies from Canada and Europe.13,21,22 Costs were adjusted for inflation and expressed in 2003 US dollars.23 Future costs associated with individual cases of HPV-related conditions were discounted 3% annually to reflect their present value.

Economic burden of noncervical HPV disease

To develop an aggregate measure of the economic burden of noncervical HPV-related conditions, we adopted an incidence-based approach whereby the discounted lifetime cost per case associated with each condition was applied to the total number of HPV-6–, -11–, -16–, and -18–attributable incident cases that occurred among men and women over a representative 1-year period (2003).1,4,6,24-34 The resulting estimates were then added for the 7 conditions to approximate the total economic burden of noncervical HPV-related disease.

RESULTS

Juvenile-onset Recurrent Respiratory Papillomatosis

Cost estimates for juvenile-onset recurrent respiratory papillomatosis were obtained from a published study.9 In this study, the discounted lifetime cost per case was estimated at $131,910, with a wide plausible range of $54,800-$276,170. Base case assumptions included an average duration of illness of 4.2 years during which each patient underwent 4.4 surgical procedures per year, a ratio of follow-up office visits to surgery of 3:1, and a tracheotomy rate of 11%.9 Costs that were considered focused on those related to the primary treatment of JORRP, which consisted of surgery (ie, physician fees and hospitalization) and follow-up visits (ie, physician fees), and to tracheotomy (ie, physician fees, hospitalization, and maintenance). In the absence of published data, the authors assumed the yearly cost of tracheotomy maintenance to be $94,980 (range, $75,980-$113,980). However, this figure has considerable uncertainty because the majority of JORRP patients with tracheotomy do not require mechanical ventilation, which comprises the bulk of tracheotomy-associated costs. As a result, we elected to use this study’s lower bound estimate of $54,800 as our base case value for the average lifetime cost per case of JORRP.

Estimates of the annual incidence of JORRP vary widely, from 80-1500 and 1448-3260 new cases.26,27 Assuming a midpoint yearly incidence of 1500 and that all cases of JORRP are attributable to HPV-6 or -11, the estimated total lifetime direct medical cost that is associated with new cases of JORRP over a representative 1-year period is $82.2 million. When upper and lower bound values for JORRP incidence and lifetime cost per case are used, this cost ranges from $4.4-$900 million.

Anogenital warts

Because a single episode of anogenital warts often is associated with the use of a combination of different therapies and there is wide variation in cost among the different treatment options, we sought published estimates of the cost per episode of newly diagnosed genital warts. We used the average cost per case of $505 from 2 available estimates from the Centers for Disease Control and Prevention ($510) and a published study ($500; range, $420-$580).6,10 In the latter study, cost per episode estimates were derived from the Marketscan database by summing all payments on the basis of diagnosis code for a single episode of anogenital warts (defined as a 12-month interval free of anogenital wart care preceding and after the current episode).10 Costs reflect health plan payments to physicians for office visits that were related to diagnosis, treatment, and/or follow-up and to pharmacies for self-applied medications or analgesics.6 To estimate the discounted lifetime cost per case of anogenital warts, we sought estimates for the average cost per episode of care and applied this cost to 75% of all new wart cases, assuming a spontaneous cure rate of 25% and an average duration per episode of care of 3 months.10 These assumptions yielded a lifetime direct medical cost per case of anogenital warts of $379. Estimates of the annual incidence of anogenital warts are imprecise and range from 250,000-1,000,000.6 Using the midpoint estimate of 500,000 new cases per year and assuming 90% of all anogenital warts are caused by HPV-6 or -11,7 we estimated the total lifetime cost that is associated with all new cases of anogenital warts that occur within a given year to be $171 million. This estimate closely approximates the figure of $190 million that was reported by Cheson et al.6 The range for our estimate is $71-$392 million, with the upper and lower bound estimates of incidence and lifetime cost per case.

Anal cancer

Because published US cost estimates for anal cancer were unavailable, the discounted lifetime cost per case of anal
cancer was approximated from a Canadian cost study of rectal cancer.13 Cost estimates included diagnostic assessment, staging work-up, initial treatment, surveillance, treatment of recurrent disease, management of metastatic disease, and terminal care. The estimated discounted lifetime cost per case of $27,660 was consistent with the estimate of $26,850 (range, $13,420-$53,700) reported by Goldie et al,35 who used data from a US study of colorectal cancer to approximate anal cancer costs.

In 2003, the American Cancer Society projected that there were 4000 new cases of anal cancer in the United States.25 Assuming that 82.8% of all anal cancer is attributable to HPV types 16 and 18,3,32,33 we estimated the total lifetime cost of all HPV-attributable incident cases of anal cancer that occurred in 2003 to be $92 million (range, $44-$178 million).

Penile cancer
We identified 3 publications with cost estimates for penile cancer.16,36,37 Our base case estimate was developed from an Institute of Medicine study of the costs and benefits of HPV vaccination.16 In this study, an expert committee developed a stage-specific clinical scenario for penile cancer to characterize resource utilization and to estimate healthcare costs. For example, costs that were related to local penile cancer included a primary care physician visit, surgery, anesthesia, hospitalization, radiation (in 50% of patients), chemotherapy (in 50% patients), and a single physician visit with a specialist. With advanced penile cancer, the clinical scenario was almost identical, with the exception of an additional 6 specialist physician visits because of the increased morbidity that is associated with advanced cancer (ie, urinary and sexual dysfunction). Cost estimates include direct medical costs that were related to initial treatment (ie, physician fees, hospitalization, surgery, radiation, and/or chemotherapy), and short-term follow-up visits (ie, 1 year) but not those that were associated with diagnostic assessment, long-term surveillance, treatment of recurrent disease, management of metastatic disease, or terminal care. Assuming two-thirds of all penile cancers are local at the time of diagnosis and the remaining one-third of the cancers are advanced,16 we determined that the discounted lifetime cost per case was $15,120. This estimate falls roughly midway between the 2 published estimates of $7,500 and $29,640, which we used as a plausible range.36,37

Using data from the American Cancer Society and National Cancer Institute, we estimated that 1145 new cases of penile cancer occurred in the United States in 2003.24,25 Assuming 25.2% of all penile cancers are attributable to HPV-16 and -18,3,28 the total lifetime cost of all HPV-16– and -18–associated penile cancers that occurred in 2003 was estimated at $4.4 million dollars (range, $2.2-$8.6 million).

Vaginal cancer
Estimates for the discounted lifetime cost per case of vaginal cancer were developed with data from a published cost-effectiveness study of Papanicolaou smear screening for vaginal cancer after total hysterectomy.17 Available vaginal cancer-related cost data included the cost of diagnosis (ie, biopsy and colposcopy) and initial treatment (ie, surgery or radiation), which were drawn from actual reimbursement rates by third-party payers (base case), with Medicare reimbursement rates representing the lower bound of cost estimates. In accordance with the National Cancer Institute,38 we assumed standard therapy for stage I was radiation or surgery (with treatment equally divided between radiation and surgery) and radiation for stages II, III, and IV. In 2003 US dollars, this translated to a lifetime cost for stage I vaginal cancer of $22,726 (range, $17,044-$28,568) and for stages II, III, and IV of $20,003 (range, $15,003-$25,263). Assuming a distribution by stage at diagnosis of 26% for stage I, 37.2% for stage II, 24.1% for stage III, and 12.7% for stage IV,39 we estimated the present value of the lifetime cost of a new case of vaginal cancer to be $20,710 (range, $15,530-$26,120).

The American Cancer Society estimated that 2000 new cases of vaginal and other female genital tract cancers occurred in the year 2003.25 Vaginal cancer represents approximately 53.8% or 1077 of all cancers in this category.24 When we assumed that 32% of all vaginal cancer is related to HPV-16 and -18,3,31 the total lifetime cost of all HPV-16– and -18–associated vaginal cancers that occurred in 2003 was estimated at $7.1 million (range, $5.4-$9.0 million).

Vulvar cancer
Because published cost estimates for vulvar cancer were unavailable, we constructed a simple mathematical model to estimate the discounted lifetime cost per case of vulvar cancer. We developed stage-specific estimates that included the cost of diagnosis, initial treatment, and short-term surveillance (Appendix). Incorporating cost and clinical data from national databases and the published literature,18,20,40 we estimated the discounted lifetime cost per case of vulvar cancer to be $18,050 (range, $11,860-$24,250).

With the assumption that 4000 new cases of vulvar cancer occurred in the United States in 2003 and that 32% of all vulvar cancer is attributable to HPV-16 and -18,3,25,29,30 the total lifetime cost of all HPV-attributable cases of vulvar cancer that newly occurred in 2003 was $23.1 million (range, $15.2-$31.0 million).

Oropharyngeal and mouth cancer
The discounted lifetime cost per case of oropharyngeal and mouth cancer was estimated from an existing study in which patients with newly diagnosed head and neck cancer from the Surveillance, Epidemiology, and End Results (SEER) registry were matched by age and gender to control subjects, and direct medical care costs over a 5-year period were compared between the 2 groups on the basis of Medicare payments.15 To estimate the lifetime cost per case, we assumed that the cost difference between patients with head and neck cancer and control subjects was attributable to cancer care and discounted the cost difference in years 2-5 with a rate of 3%. This
pharyngeal cancer in the United States.\textsuperscript{25} Mouth cancer and 8300 new cases of oro-
pharyngeal cancers that were treated in 2 university hospitals.\textsuperscript{22} With a 4\% discount rate, the study estimated an average lifetime cost per case of $46,800.

In 2003, the American Cancer Society projected that there were 9200 new cases of mouth and oropharyngeal cancer in the United States.\textsuperscript{25} Assuming 2.9\% of all mouth cancers and 10.7\% of all oropharyngeal cancers are caused by HPV-16 and -18,\textsuperscript{3,34} we estimated the total lifetime costs for all new cases of mouth and oropharyngeal cancer that occurred in 2003 to be $38.1 million (range, $17.7-$54.1 million).

**Economic burden of noncervical HPV-6\textemdash, -11\textemdash, -16\textemdash, and -18\textemdash-related disease**

For the 7 HPV-6\textemdash, -11\textemdash, -16\textemdash, and -18\textemdash-related conditions that were considered, the total economic burden (expressed in 2003 US dollars) associated with the new cases that occurred in 2003 was $418 million, with a plausible range of $160 million to $1.6 billion (Table). Under base case assumptions, HPV-6\textemdash and -11\textemdash-related conditions accounted for >60\% of the total burden. This was due to the high incidence and large HPV-attributable fraction of JORRP and anogenital warts and the considerable discounted lifetime cost per case that was associated with JORRP. Three conditions (JORRP, anogenital warts, and anal cancer) were responsible for >80\% of the costs that were attributable to noncervical HPV-related conditions.

**Comment**

Despite formidable data gaps, our review of secondary data and estimation of the direct medical costs that are associated with 7 HPV-related conditions demonstrate a substantial economic burden imposed by HPV-attributable noncervical disease in the United States. With the use of an incidence-based approach, the economic burden associated with noncervical HPV-related conditions that occurred in the United States in the year 2003 approximates $418 million. This figure has a considerably wide plausible range of $160 million to $1.6 billion, which is driven predominantly by the substantial uncertainty in the cost of JORRP and the incidence of JORRP and anogenital warts.

Two vaccines against HPV-16 and -18 have been found to be highly efficacious against same type incidence and precancerous lesions of the cervix, vagina, and vulva among women without indication of previous infection with these types; the quadrivalent vaccine currently licensed in the United States also prevents infection with HPV-6 and -11, which are responsible for most genital warts and JORRP.\textsuperscript{5} Given these options for primary prevention of HPV-related disease, along with enhanced screening approaches for secondary prevention of HPV-related cervical cancer, there is
considerable interest in comparative assessments of the health and economic consequences that are associated with alternative strategies to reduce the burden of HPV-related disease. Accordingly, we provide a comprehensive estimate of the economic burden of noncervical HPV-related disease in the United States. Although we consider this figure to be an approximate estimate at best, nonetheless, our results highlight the significant cost dimensions of this health problem and the importance of preventing these conditions to reduce both the health and economic burden of HPV infection. The estimated costs that are associated with each HPV-related condition can be used in future economic evaluations of HPV vaccination, and the lower and upper bound estimates as the plausible range for sensitivity analyses.

Our study has several limitations that merit acknowledgement. First, sources of cost data were limited, and the quality of available information was variable. For example, much of the data that were used to derive lifetime cost per case estimates were not comprehensive. Many estimates included only selected aspects of care, such as diagnosis and treatment, and omitted costs that were related to staging, surveillance, or recurrence. In these instances, cost per case figures likely underestimate the actual lifetime cost of the disease. In addition, sources of cost information ranged from private health insurance to Medicare claims, each of which is associated with its own inherent flaws and biases. Second, we did not consider nonmedical direct or indirect costs, such as transportation costs to healthcare facilities or the value of work time lost receiving healthcare. Studies that address these types of costs are unavailable for noncervical HPV-related conditions. Incorporation of these costs would make the economic burden of noncervical HPV-attributable disease even higher. Third, other HPV-attributable conditions such as vulvar, vaginal, penile, and anal intraepithelial neoplasia were not included in our burden analysis. However, because there are no screening recommendations for these conditions and the fraction of cases that can be attributed to HPV is unknown, the contribution of these conditions to the total HPV cost burden is also unknown. Fourth, the population-attributable fraction of noncervical cancers to HPV is uncertain. Because HPV is highly prevalent in healthy subjects, this method may overestimate the fraction of cancers to attributable HPV infection. Finally, there was considerable uncertainty surrounding the cost of JORRP and the incidence of JORRP and anogenital warts. Because these 2 conditions may account for >60% of the economic burden of noncervical HPV disease, we believe refinement of these estimates to be a particularly high priority for future research studies.

Directly comparable estimates of the total economic burden of noncervical HPV-related disease associated with incident cases over a 1-year period were not available. Previous studies have focused primarily on individual facets of this health problem, such as anogenital warts or JORRP. We were unable to identify any published estimates of the total lifetime direct medical cost of anal, penile, vaginal, or vulvar cancer. This may be due to the fact that these cancers are relatively uncommon. As a result, economic burden data for HPV have been confined largely to cervical disease and likely represent an underestimate of the economic burden that is posed by HPV infection.

Quantification of the cost dimensions of noncervical HPV-attributable disease is important because it offers insight into not only the overall economic magnitude but also the relative contribution of different HPV-related conditions. For example, although cervical disease is responsible for most of the cost burden that is associated with HPV-related disease, the contribution of noncervical disease is still considerable, with our base case estimate representing nearly 9% of the total economic burden when incidence-based estimates are used. Among the noncervical HPV-attributable conditions, anogenital warts contribute to the largest fraction of the total burden, followed by anal cancer and JORRP. In fact, noncancerous conditions due to HPV-6 and -11 (JORRP and anogenital cancer) are responsible for >60% of the total economic burden of noncervical HPV-related disease. Such information may be useful to policymakers and public health researchers for informed decisions about investments in potential HPV prevention programs.

In summary, our results demonstrate the substantial economic burden that is imposed by HPV-attributable noncervical disease in the United States. Future research priorities should include the refinement of cost estimates for noncervical HPV-related conditions, the incidence of JORRP and anogenital warts, and the population HPV-attributable fraction of noncervical conditions.

REFERENCES


**Appendix**

**Literature review of the available costing studies for noncervical HPV-related conditions**

Published articles that have addressed the cost of each of the 7 noncervical HPV-related conditions that were considered in this study (ie, anogenital warts, JORRP, and cancer of the anus, penis, vagina, vulva, mouth, and oropharynx) were identified with a systematic computerized search of MEDLINE and the British National Health Service Economic Evaluation Database and by manual review of the bibliographies of selected articles. The MeSH key word cost or cost analysis was combined with the key words human papillomavirus, anogenital warts, juvenile-onset recurrent respiratory papillomatosis, anal cancer, penile cancer, vaginal cancer, vulvar cancer, oropharyngeal cancer, mouth cancer, and head and neck cancer. Whenever possible, we sought published discounted lifetime cost per case estimates (anogenital warts, JORRP)6-8,9,10 However, because of the paucity of available studies, especially regarding noncervical HPV-related cancers, we approximated the discounted lifetime cost per case by using the best available data and simple modeling exercises to reflect the lifetime cost stream (mouth/oropharyngeal cancer, penile cancer, vaginal cancer, and vulvar cancer).14-20 We were unable to identify any published costing studies for anal cancer and used cost estimates for rectal cancer as a proxy. To the extent possible, data sources from the United States were used.4,10,14-20 Although we supplemented these data with studies from Canada and Europe.13,21,22

**Stage-specific estimation of the cost of vulvar cancer diagnosis and treatment**

In developing stage-specific estimates of the average lifetime cost of vulvar cancer (Appendix Table 1), we limited our costs to those that were related to diagnosis, treatment, and surveillance. Treatment strategies were based on the recommendations of the National Cancer Institute,19 whereby stage I vulvar cancer was treated with surgery alone and
stages II–IV were treated with a combination of surgery and radiation. We developed stage-specific clinical scenarios to determine which unit costs should be included in our calculations (Appendix Table 2). For example, diagnosis of all stages consisted of an initial physician office visit, biopsy, examination of the biopsy specimen for pathology, and a follow-up visit to discuss the biopsy results. Treatment costs of stage I vulvar cancer consisted of costs that were related to vulvectomy, pathologic examination of an intraoperative frozen specimen and the entire surgical specimen, and hospitalization. Treatment costs of stages II–IV vulvar cancer included the cost of radiation therapy in addition to the cost of vulvectomy, pathology, and hospitalization. We assumed that all patients were seen by a physician on a semiannual basis for surveillance for 5 years after treatment. Sources of cost data included the 2004 Medicare Fee Schedule for physician fees that are related to the various components of care and the Healthcare Cost and Utilization project for hospitalization-related costs.19,20 For physician-related costs, we used nonfacility fees as the upper bound estimate and facility fees for the lower bound estimate and averaged the 2 for the base case estimate. With regard to hospitalization-related costs, we used the mean cost and charge within the category “cancer of other female genital organs” as our plausible range and the average for the base case estimate.

### APPENDIX TABLE 1
Estimated average discounted lifetime cost of vulvar cancer by stage and overall

<table>
<thead>
<tr>
<th>Stage</th>
<th>Base case ($)</th>
<th>Lower bound ($)</th>
<th>Upper bound ($)</th>
<th>All vulvar cancer (€) (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>10,103.03</td>
<td>6,713.05</td>
<td>13,547.11</td>
<td>33.1</td>
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<tr>
<td>II</td>
<td>20,992.38</td>
<td>13,478.27</td>
<td>28,506.49</td>
<td>34.6</td>
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<tr>
<td>III</td>
<td>23,027.36</td>
<td>15,397.98</td>
<td>30,656.74</td>
<td>23.8</td>
</tr>
<tr>
<td>IV</td>
<td>23,027.36</td>
<td>15,397.98</td>
<td>30,656.74</td>
<td>8.5</td>
</tr>
<tr>
<td>Overall (weighted by stage)</td>
<td>18,045.30</td>
<td>11,859.05</td>
<td>24,249.47</td>
<td></td>
</tr>
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</table>


### APPENDIX TABLE 2
Current procedure terminology codes and costs that were used for estimation of the total lifetime cost of vulvar cancer

<table>
<thead>
<tr>
<th>Variable</th>
<th>Current procedure terminology code</th>
<th>Base case ($)</th>
<th>Lower bound ($)</th>
<th>Upper bound ($)</th>
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<tr>
<td>Diagnosis</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Initial physician visit</td>
<td>99241, 99242, or 99243</td>
<td>108.30</td>
<td>46.22</td>
<td>170.38</td>
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<tr>
<td>Biopsy</td>
<td>56605, 56606, 56820, or 56821</td>
<td>148.41</td>
<td>85.89</td>
<td>210.92</td>
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<tr>
<td>Pathological examination</td>
<td>88305</td>
<td>140.91</td>
<td>140.91</td>
<td>140.91</td>
</tr>
<tr>
<td>Follow-up visit</td>
<td>99241, 99242, 99243</td>
<td>108.30</td>
<td>46.22</td>
<td>170.38</td>
</tr>
<tr>
<td>Stage I treatment</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Surgical excision or simple vulvectomy</td>
<td>11622, 56620, or 56625</td>
<td>478.35</td>
<td>190.83</td>
<td>765.87</td>
</tr>
<tr>
<td>Pathological examination</td>
<td>88309 ± 88331</td>
<td>367.82</td>
<td>308.21</td>
<td>427.42</td>
</tr>
<tr>
<td>Hospitalization (applied to 50%)</td>
<td>15,828.54</td>
<td>8,680.08</td>
<td>22,977.01</td>
<td></td>
</tr>
<tr>
<td>Stage II, III, and IV treatment</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Radical vulvectomy</td>
<td>56630, 56631, or 56632</td>
<td>1,231.77</td>
<td>1,069.64</td>
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<td>Pathological examination</td>
<td>88309 and 88331</td>
<td>367.82</td>
<td>308.21</td>
<td>427.42</td>
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<td>Hospitalization</td>
<td>15,828.54</td>
<td>8,680.08</td>
<td>22,977.01</td>
<td></td>
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<tr>
<td>Radiation therapy (applied to 50% of stage II, 100% of stage III/IV)</td>
<td>77263, 77295, 77300, 77336, 77413, and 77427</td>
<td>4,069.96</td>
<td>3,839.43</td>
<td>4,300.49</td>
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<tr>
<td>Surveillance</td>
<td>99242</td>
<td>111.73</td>
<td>94.47</td>
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