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## HPV-related cancers: case studies and treatment

Lisa A. Bartenhagen

*University of Nebraska Medical Center, labarten@unmc.edu*

Tanya M. Custer

*University of Nebraska Medical Center, tcuster@unmc.edu*

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# HPV-Related Cancers

## Case Studies & Treatment

School of Allied Health Professions, Division of Radiation Science Technology Education

Lisa Bartenhagen, MS, R.T.(R)(T), Tanya Custer, MS, R.T.(R)(T)

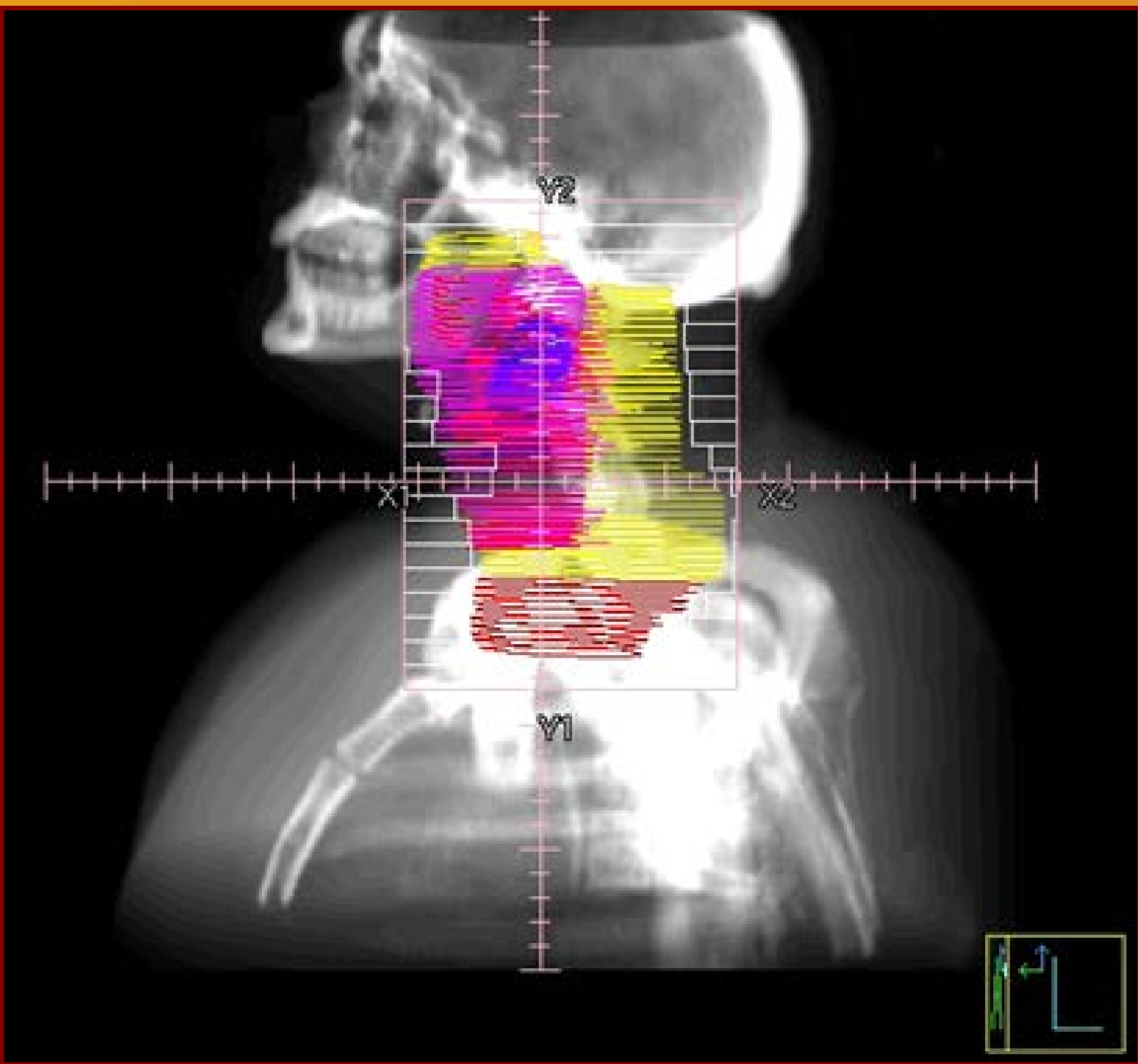


Image 1. Treatment plan for tonsillar HPV-related cancer.

### Case Study #1

A 59 year old female presented with a sore throat & sinus issues for almost one year along with a right side neck mass.

Histology revealed HPV-16 related squamous cell carcinoma of the tonsil measuring 5.8 cm. The tumor was staged as T4a, N1, M0.

Radiation therapy to a dose of 6000cGy at 200cGy /fraction over 30 fractions was prescribed (Image 1). The patient received two cycles of concurrent chemotherapy.

Side effects included: Skin erythema, severe mucositis and constant xerostomia.

Prognosis – HPV related H & N Cancers

HPV + 62% 5 year survival rate

HPV – 26% 5 year survival rate

### Case Study #2

A 72 year old female presented with a 3- 4 month history of weight loss of 30 lbs., diarrhea and pain while sitting. A CT of the pelvis revealed a large anorectal mass with extension into the lower pelvis measuring 14 x 10 x 8 cm.

The histology report noted moderately differentiated squamous cell carcinoma & the tumor was staged as Stage cT4 cN0 cM0.

Radiation therapy to a total dose of 5580 cGy was prescribed at 180 cGy/fraction. The patient also received 5FU and mytomyacin C.

Due to the large treatment field, as noted in Image 2, doses to the bowel and bladder were documented. Side effects included diarrhea, abdominal cramps and skin changes.

Prognosis - 65% 5 year survival rate (all stages)

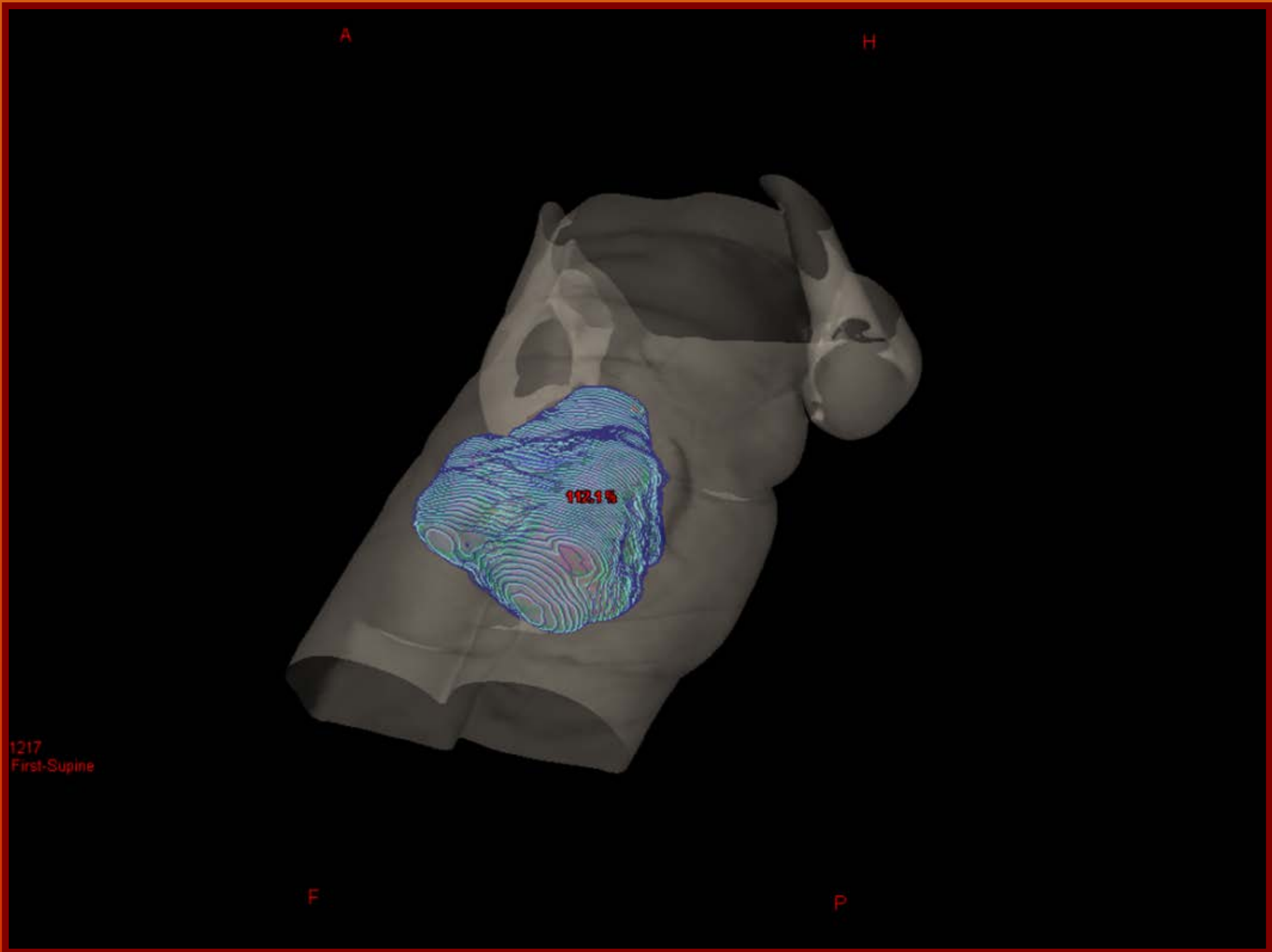


Image 2. 3D reconstruction of anal HPV-related cancer.

## Abstract

Human Papillomavirus (HPV) is associated with more than 150 viruses.<sup>1</sup> HPV is an infection of the basal epithelium and transmission can occur either by direct contact or during childbirth. More than 50% of sexually active people will be infected with some form of HPV during their lifetime.<sup>2</sup> Two categories of sexually transmitted HPV include low-risk HPVs, which are not cancer causing, and high-risk, or oncogenic HPVs, which can lead to a cancer diagnosis. Malignancies found to be associated with HPV infection include cervical, vaginal, vulvar, penile and anal cancers as well as cancers of the oropharynx. Treatment of HPV-related cancers often includes surgery, chemotherapy and radiation therapy. Health education and prevention is necessary to reduce cancers related to HPV infections. Education on abstinence and vaccinations are two methods proven to be effective. The role of the health care provider is to educate adolescents regarding the risk of sexually transmitted disease and ways to protect themselves from HPV-related cancers such as the cases reviewed in this exhibit.

## Pathogenesis

The pathogenesis of HPV involves viral particles which enter the epithelial cells at areas of micro trauma, actively targeting proliferating basal cells. As the infected cells migrate away from the basal layer, viral DNA is packaged into virions (infectious virus). When the epithelium is shed, viral particles are released and are able to infect other cells (Figure 1).<sup>2</sup>

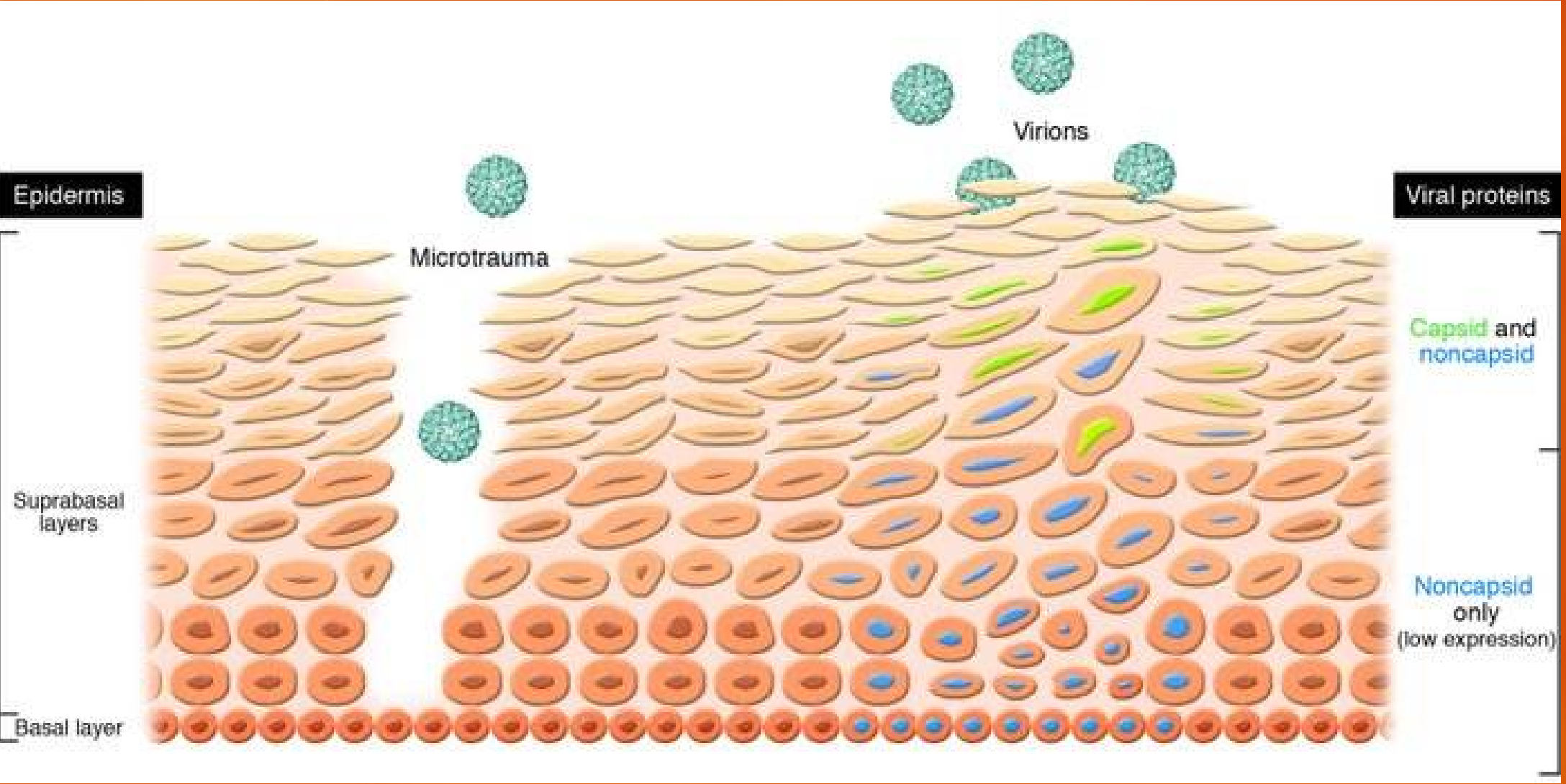


Figure 1. Pathogenesis of HPV<sup>2</sup>

## Prevention

Vaccination was approved for females between the ages of 9 and 26 by the Food and Drug Administration in 2006 and for males in 2009 (Table 1).

Both HPV vaccines currently available have proven efficacy for prevention of HPV vaccine type-related persistent infection and adenocarcinoma in-situ.<sup>3</sup> Vaccination does not immunize against, or help clear prior viral exposure.<sup>4</sup>

The efficacy drops precipitously in people previously exposed to HPV. The only way to completely prevent getting HPV is abstinence.

HPV Vaccine	Recommended for ages	# of doses	FDA Approved	Cost	Protects Against Strains	Which may cause	High or Low Risk Strain?
Gardasil	9 to 26	3	6/8/2006	\$360	6 11 16 18	genital warts genital warts cervical cancer cervical cancer	Low Low High High
Cervarix	10 to 25	3	10/16/2009	\$300* <small>*NCH estimate</small>	16 18 31+ <small>(*via cross-protection)</small>	cervical cancer cervical cancer cervical cancer	High High High

Table 1. Vaccination comparison <sup>5</sup>

## Conclusion

Each year, there are an estimated 26,000 HPV-attributable cancers in the United States. The CDC estimates that \$8 billion are spent yearly on direct medical costs for preventing and treating HPV-associated disease.<sup>6</sup> Radiation therapy and chemotherapy contribute to this overall cost. Education at the adolescent/parental level is important to produce a decline in HPV-related malignancies.

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