

HPV EPIDEMIOLOGY

LITERATURE REVIEW

Faculty Review: Dr. Neelamegam

Group Leads: Aanchal Sharma, Megan Slaughter

Student Team: Samhitha Bhat, Ronald Makumbi, Rajvi Makwana, Sonny Muscanere, Ikuabe Osholene, Kara Patrick

What is HPV ?

Human papillomavirus (HPV) is a group of 200+ viruses responsible for various forms of cancer.¹³

Types Include:^{6,14}

- **Low-risk:** Causes warts (e.g., HPV 1-4, 6, 11).
- **High-risk:** Includes 12 types (e.g., HPV 16, 18) linked to cancers like cervical, anal, and throat.

Symptoms¹⁴

- Abnormal bleeding or pain during intercourse
- Pelvic pressure or increased vaginal discharge
- Chronic sore throat, hoarseness, or cough
- Numbness or tingling in the lips or tongue
- Persistent one-sided earache or drooling
- White/red discoloration in the mouth

Transmission⁶

HPV spreads through intimate skin-to-skin contact, including:

- Vaginal, anal, or oral sex
- Deep kissing
- Contact with warts
- Perinatal transmission

Screening and Early Detection

- Pap Smear: Screens for cervical cancer and precancerous cells with 82% accuracy.¹¹
- HPV Test: Detects HPV and cervical cell abnormalities during Pap smears with high sensitivity.¹⁰
- Colposcopy: Examines and biopsies abnormal cells; 96% diagnostic accuracy.¹¹
- Oral HPV: No early test exists. Lesions may be found during routine exams. Biopsy and testing are used for evaluation if lesions or symptoms are present.¹⁴

Early detection improves outcomes. Regular screenings are essential.

Vaccine and Prevention^{4,7,12}

The **HPV vaccine**, administered in 2- or 3-dose regimens starting at age 9, is **nearly 100% effective** at preventing precancers caused by targeted HPV strains. Studies show a single dose can provide sustained protection.

Vaccination also leads to **herd immunity**, reducing the prevalence of targeted HPV strains in both vaccinated and unvaccinated individuals. Prevention through vaccination is key to reducing HPV-related cancers.

Myth vs Fact

Myth

- HPV vaccine is not safe
- HPV vaccine encourages risky behavior in those vaccinated
- HPV vaccine causes infertility

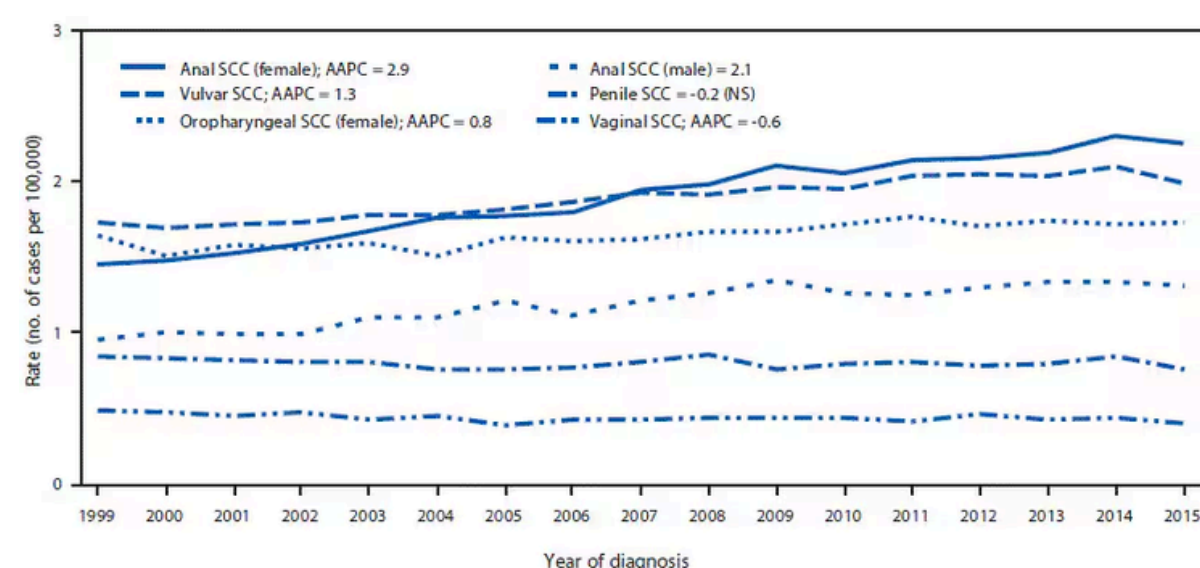
Fact

- The HPV vaccine has been subjected to a **rigorous safety assessment** and has been approved since 2006.⁸
- Studies have shown that receiving the HPV vaccine does not lead to an increase in sexual activity or risky behavior.¹⁵
- There is no evidence that the HPV vaccine causes infertility. In fact, it **helps prevent HPV-related cancers**, which might affect fertility.³

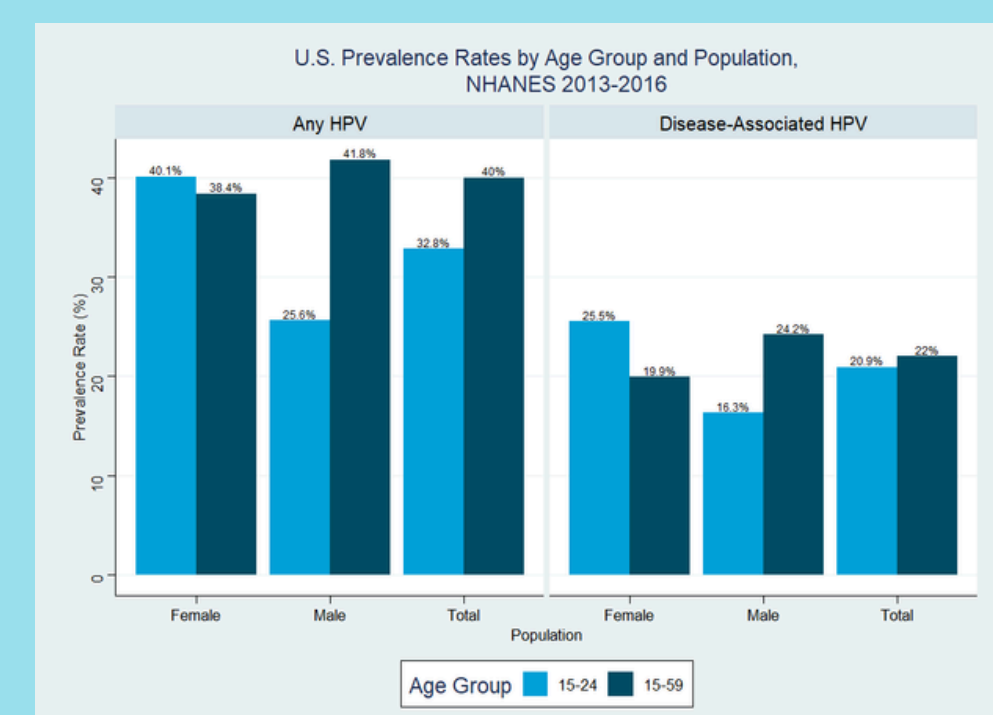
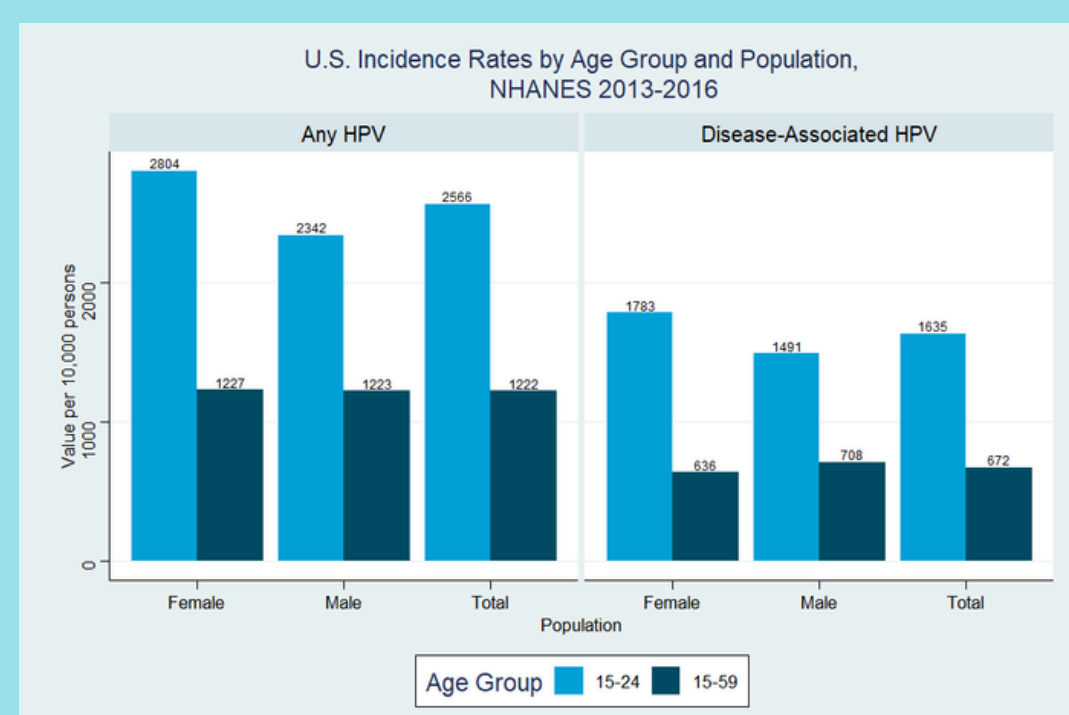
Economic Burden

The **annual direct healthcare cost of HPV** in the U.S. is estimated at **\$8.0 billion**, with \$6.6 billion spent on cervical cancer screening and follow-up. This highlights the substantial economic burden of HPV and the importance of prevention and early detection efforts.⁵

Trends in HPV-associated cancer incidence in the US¹⁷



U.S. Incidence and Prevalence Rates, 2013-2016⁹



References



HPV and Cancer

- Causes 79.2% of 47,100 annual HPV-related cancers in the U.S.^{1,2}
- Globally: 620,000 cases in women and 70,000 in men yearly.¹⁵
- In the U.S.: 200,000 women diagnosed with cervical pre-cancer annually; 11,100 develop cervical cancer; 4,000 die.¹⁸

