HUMAN PAPILLOMA VIRUS (HPV) PREVENTION CAN PREVENT CANCER

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INTRODUCTION

Prevalence:
HPV is one of the most common sexually transmitted infections worldwide.[22]

Symptoms and Screening:
HPV can cause visible warts, but it is often asymptomatic. Because of this, screening plays a crucial role in prevention and early detection. Those with a history of multiple HPV infections or multiple sexual partners are at higher risk and should discuss screening options with their healthcare providers.[8]

Association with Other Diseases:
HPV can cause several cancers, collectively known as HPV-associated cancers, including lung, anogenital, and oral cancers. While HPV alone can lead to cancer, other factors increase the risk, such as:

- Smoking
- Vitamin B9 (folate) deficiency
- UV light exposure
- Immune suppression
- Pregnancy

Prevention:

- Condoms reduce but don't fully prevent transmission
- HPV vaccination is highly recommended for protection

RISK FACTORS

Transmission:
HPV spreads through direct contact between an infected area of the skin and an uninfected person. It is important to know that non-sexual transmission can also occur via objects like toys, skin-to-skin contact, mother to child during birth (low-risk).[14]

Main Transmission Routes:[2,19]

- Genital-to-genital, anal-to-genital, or genital-to-oral contact
- Other Transmission Modes:
- Auto-inoculation (touching genitals, then mouth)
- Perinatal transmission during vaginal delivery
- Oral-to-oral contact (e.g., deep tongue kissing)

Non-Sexual Transmission:[5,6,17]

- Skin-to-skin contact or douching may explain HPV in sexually inactive girls (8%)
- Fingers and objects like toys can spread HPV if they contact infected areas

At-Risk Populations:

- Healthcare Workers: Risk of exposure to aerosolized HPV during procedures; vaccination and protective gear are advised
- Immunocompromised Individuals: Higher risk of persistent infections and progression to cancer

Screening

Screening options for HPV include pap smears and HPV tests.
It is recommended that individuals discuss which screening option is better for them with their healthcare provider.[3]

What to Expect in a Pap test or HPV Test?

Pap Test:
A Pap test is meant to check for changes that could have occurred in the cervix. This test can inform your provider about any possible cervical cancer, inflammation, infection, and other diseases.

What to Expect:

- **A physician will insert a speculum in your vagina to allow for the doctor to see the cervix. Next, the doctor will collect some cells from the surface of the cervix. This usually does not hurt but may feel uncomfortable. The same cells that are collected can be used in the HPV tests also (i.e. Cotesting).**
- **Results can be discussed with the physician and timeline for results to be received may vary across healthcare facilities.[1]**

HPV Test:
An HPV test informs your provider about HPV infections. This test may be done together with a Pap test.

What to Expect:

- **A provider inserts a speculum into your vagina to better see the cervix. A tool that looks like a q-tip is used to collect cells around the cervix rather than from the surface as in the PAP test.**

*****Note that you may be allowed to collect the HPV sample yourself upon consultation with your healthcare provider.[1]**

CERVICAL SCREENING GUIDELINES

Population	Recommendation
Ages under 21	No screening recommended (unless risk factors present)*
Age 21-29	Pap smear/cervical cytology recommended every 3 years
Age 30-55	Pap smear/cervical cytology recommended every 3 years OR HPV testing recommended every 5 years
Ages 65+	No screening recommended if previously tested negative (speak with your provider to assess if continued screening is necessary)*
History of hysterectomy with cervix removal	No screening recommended (unless risk factors present)*

*Screening Guidelines for individuals according to the American College of Obstetrics and Gynecology based on age. Please note that individual circumstances should be taken into account and discussed with a healthcare provider.[3]
*Patients with increased risk for cervical cancer (including history of HIV infection, immunocompromised, in utero exposure to diethylstilbestrol, or previous precancerous lesion/cervical cancer) should receive a more individualized screening schedule based on the recommendations of their provider.

Vaccination Can Help Prevent Cancer:

Purpose:

The HPV vaccine helps prevent infections caused by Human Papillomavirus (HPV) and related diseases, including:

- **Cervical Cancer**
- **Genital Warts**
- **Other Cancers: Oropharyngeal, anal, vaginal, and penile cancers**

Vaccine Details: [8]

Gardasil 9 is the most widely used vaccine and offers protection against nine HPV strains:

- **High-Risk Types: 16 & 18 (strongly linked to cervical and other cancers)**
- **Low-Risk Types: 6 & 11 (responsible for most genital warts)**
- **Additional High-Risk Types: 31, 33, 45, 52, and 58, enhancing its cancer prevention capabilities**

The Centers for Disease Control and Prevention (CDC) recommends routine vaccination for: [11,15]

- **Boys and Girls: Ages 11-12, although vaccination can start as early as age 9**
- **Older Adolescents: Those starting the vaccination series at age 15 or older require three doses instead of two up to age 26**
- **Adults Aged 26-45: Individuals should discuss vaccine administration with their healthcare provider and make a shared decision**
- **Adults 45+: HPV vaccine is not licensed for Adults 45 years and older**

Special Populations: [4]

- **Lactating Females: Can safely receive the vaccine series without affecting breastfeeding safety**
- **Pregnancy: Vaccination during pregnancy is not recommended due to limited data; however, current evidence does not indicate adverse pregnancy events for women who become pregnant after starting the vaccine series**
- **Immunocompromised: HPV vaccination is recommended for all immunocompromised patients through the age 26**

Screening and Vaccination Resources Available

Coverage options

Medicare:

- **Part B covers screening for individuals over 65, with disability, or those with specific medical conditions**
- **HPV testing as part of a Pap smear is covered every 24 months at no extra cost**
- **For individuals at increased risk of cervical or vaginal cancer or those with a history of abnormal pap tests, testing is covered every 12 months**
- **Covers HPV testing once every 5 years if you are 30-65 and do not have HPV symptoms**

Texas Breast and Cervical Cancer Services (BCCS) Program:

- **Covers women over 18 without health insurance or in low-income households**
- **It covers numerous screening exams like pelvic exams, pap smears with HPV testing, and mammography**

Private insurance:

- **Required to cover cervical cancer screenings for anyone with a cervix aged 21-65**
- **Based on insurance plans, there may be an associated extra cost for the clinic visit**

Self-pay:

- **For patients without health insurance**
- **Clinic visits can cost up to $150, pap smears can cost between $50 and $140 with HPV testing**
- **There are also at-home HPV testing kits that cost between $50 and $80, some are even partially covered by insurance**

Community resources

Texas Vaccines for Children

- **Program that provides the HPV vaccine to uninsured or underinsured individuals between the ages of 9-18**

Texas HPV Coalition

- **Aims to increase statewide HPV vaccination rates and provide informative resources**

Tarrant County Public Health's Outreach Prevention Team

- **Offers free and confidential sexually transmitted infection testing**

Planned Parenthood

- **Multiple locations in the Dallas-Fort Worth metroplex provide condoms and the HPV vaccine for free or at a low cost based on income or other eligibility requirements**

The Texas Department of State Health Services

- **Can be contacted for assistance in locating vaccination sites**

Additionally, if individuals cannot locate vaccination sites near them, they can contact the Texas Department of State Health Services. Individuals can call their DSHS Public Health Regions, 2-1-1 Texas, or the DSHS Immunization Unit at: *(800) 252-9152*

Future Outlook and Technological Advancements

The fight against HPV (human papillomavirus) is advancing in exciting ways to improve prevention, early detection, and treatment:

- **Gardasil 9 Vaccine: This vaccine remains the gold standard for preventing HPV, offering protection against nine strains linked to cervical and other cancers.**
- **Current clinical trials are being implemented regarding reducing the dose of vaccine administration to one dose however more data is needed at the moment.**
- **Nanotechnology Vaccines: New vaccines using nanotechnology are being developed to improve prevention by more effectively delivering vaccine components.**
- **At-Home Testing: Smartphone-based tools are being designed for self-administered HPV tests, making early detection more accessible.**
- **Gene Editing Treatments: Researchers are exploring CRISPR technology to treat HPV by directly targeting and editing the virus in infected cells.**
- **Wearable Health Monitors: Wearable devices are being developed to track HPV infections and monitor cancer-related markers in real-time.**

These advancements represent significant steps toward better access and more effective strategies for preventing and treating HPV-related health concerns.[9,13,18,20,23]

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