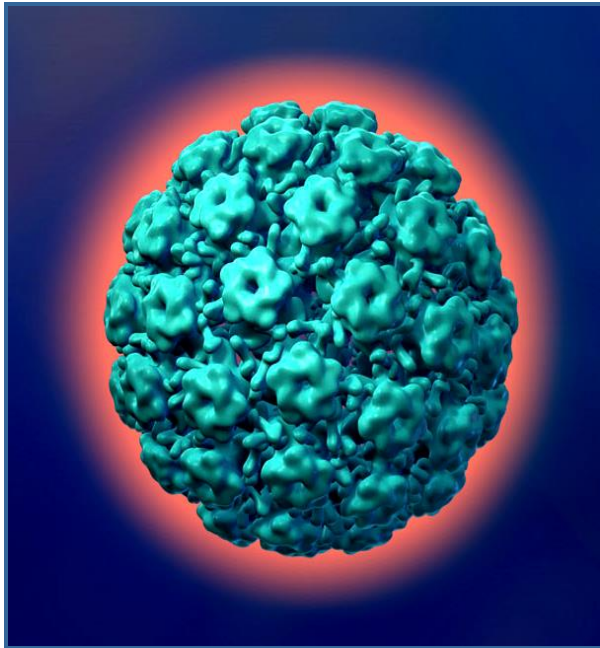




HPV & OROPHARYNGEAL CANCERS

Tahereh Soori
Infectious Diseases Specialist
Associated Professor
Tehran University of Medical Sciences

Ethiology



- **Non envelope** virus, Double stranded circular **DNA** genome
- 55 nm diameter, Icosahedral capsid with 72 capsomers, 7900 base pairs



HISTORY

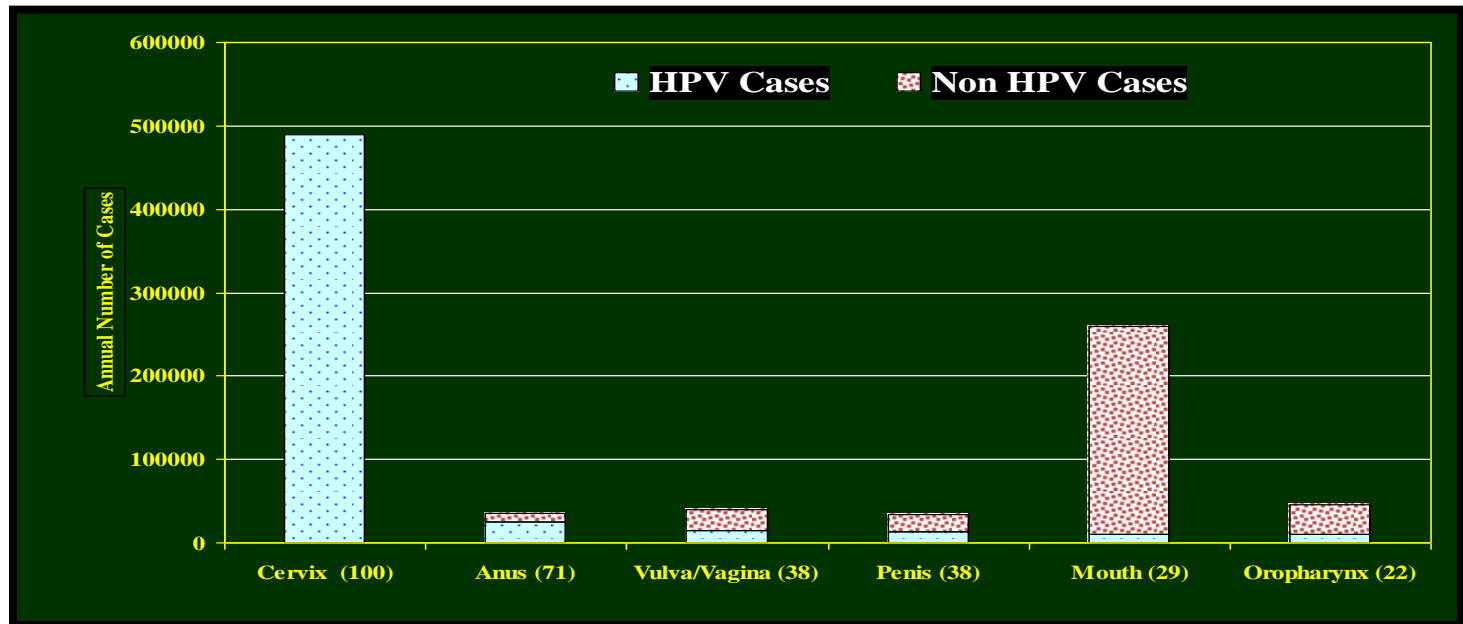
- First discovered in skin cells in the **1950s**, HPV is now understood to infect basal keratinocytes in the skin or mucosal membranes.
- The role of HPV in carcinogenesis of the cervix was elucidated by Harald zur Hausen, for which he received the 2008 Nobel Prize in Medicine .

HPV

- ~100 types identified
- ~30–40 anogenital , ORAL
 - ~15–20 oncogenic
 - HPV **16** and **18** types account for majority of worldwide cervical cancers and are associated in nasopharyngeal cancers(16)
 - Other High-Risk HPV Types: 31,33,35,39,45, 51, 52, 56, 58, 59, 68,82
 - Nononcogenic types
 - HPV **6** and **11** are most often associated with external anogenital warts. **These two types are responsible for >90% of genital warts or oral cavity warts.**
 - Other Low Risk HPV Types: 40,42,43,44, 54, 61, 72, 73, 81

Risk not well established yet: 26, 53, 66

Worldwide incidence and distribution of cancers attributable to HPV



HPV has been found to cause cancer of the ***cervix, anus, penis, vulva, vagina, and oropharynx***, as well as benign genital and oral warts, respiratory papillomatosis

Epidemiology

- **HPV in the world**

- The most common STI
- Prevalence:5%

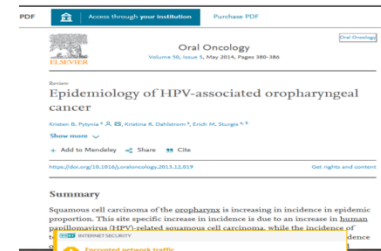
- **HPV in Iran:**

- prevalence among Iranian women (Tehran, Shiraz, Gorgan, Bushehr) : 7.4%
- Another study was 9.4% of healthy women
- General population 2.8% are HPV 18/16 infected
- 58.5% , 76% of cervical cancers are related to HPV16/18

Epidemiology

- The incidence of HPV-positive OPSCC is increasing markedly, and it is not hyperbole to call this an **epidemic**.
- Approximately 25% of head and neck squamous cell carcinoma (HNSCC) worldwide are associated with high-risk human papillomaviruses (HPV).
- estimated 85,000 cases of oropharyngeal cancer worldwide
- at least 22,000 of these were HPV positive
- Within 6 years there was a **225%** population-level increase in HPV-positive OPSCC in the United States and a concomitant 50% decrease in HPV-negative OPSCC

majority of HPV-related OPSCC cases are caused by HPV16.



Natural History of Low-risk HPV Types

Median time to wart development after infection is **6–10 months** (range up to **18 months**) previously *2.9 months*

Transient productive viral infection leads to minor cellular abnormalities and the development of low-grade lesions

Clearance

Recurrence rate is >25% within the first 3 month

Natural History of High-risk HPV Infection and Potential Progression to Cancer

Clearance

persistent infection is the most important risk factor for the development of cancer precursor lesions.

Only a minority(< 1%) of HPV infected individuals develop cancer

HPV Natural History

- Median time to clearance of HPV
- (including oncogenic and nononcogenic types).
- in women was 9.4 months.
- in men was 7.5 months

HPV neither correlates with nor predicts survival in NPC.

Wiley Online Library

Search

Login / Register

WILEY
Discover the latest open access advances

World Journal of Otorhinolaryngology - Head and Neck Surgery

Start here

HEAD-NECK
JOURNAL OF THE SCIENCES AND SPECIALTIES OF THE HEAD AND NECK

ORIGINAL ARTICLE

Human papillomavirus and nasopharyngeal cancer

Vivek Verma MD, Charles B. Simone II MD, Chi Lin MD, PhD

First published: 11 January 2018 | <https://doi.org/10.1002/hed.24978> | Citations: 23

Read the full text >

PDF TOOLS SHARE

Abstract

Background

There are no existing high-volume studies characterizing human papillomavirus (HPV)-associated nasopharyngeal cancer (NPC).

Recommended

Nasopharyngeal cancer: Incidence and prognosis of human papillomavirus and Epstein-Barr virus association at a single North American institution

Shannon S. Wu BA, Bonnie Chen MD, Christopher W. Fleming MD, Akeesha A. Shah MD

HPV-positive HNSCCs have a more favorable outcome and greater response to therapy.



American Journal of Otolaryngology
Volume 39, Issue 6, November–December 2018, Pages 764-770



Is human papillomavirus and p16 expression associated with survival outcomes in nasopharyngeal cancer?: A systematic review and meta-analysis ☆

Tristan Tham ^a, Sushma Teegala ^a, Yonatan Bardash ^a, Saori Wendy Herman ^b, Peter Costantino ^a

Show more ▾

+ Add to Mendeley Share Cite

<https://doi.org/10.1016/j.amjoto.2018.07.005>

Get rights and content

we could not draw a definitive conclusion as to the prognostic significance of HPV in NPC.

DF

Access through your institution Purchase PDF

Download Dismiss

Article Advance

Cancer Letters

Volume 288, Issue 2, 28 February 2010, Pages 149-155

Mini-review

HPV-induced oropharyngeal cancer, immune response and response to therapy

Ha Linh Vu, Andrew G. Sikora, Shibo Fu, Johnny Kao ^a, ^b

Show more ▾

+ Add to Mendeley Share Cite

<https://doi.org/10.1016/j.canlet.2009.06.026> Get rights and content

Abstract

Approximately 25% of head and neck squamous cell carcinoma (HNSCC) worldwide are associated with high-risk human papillomaviruses (HPV). HPV-positive HNSCCs have a more favorable outcome and greater response to therapy. While chronic HPV infection allows for the

Recommended articles

Treatment de-escalation for HPV-driven ...
Clinical and Translational Radiation Oncology, ...
Download PDF View details ▾

Pre-treatment absolute lymphocyte coun...
Oral Oncology, Volume 116, 2021, Article 105245
Purchase PDF View details ▾

HPV: Molecular pathways and targets
Current Problems in Cancer, Volume 42, Issue ...
Purchase PDF View details ▾

1 2 Next >

Article Metrics

Citations

Citation Indexes: 61

Captures

Exports-Saves: 26

Readers:

INTERNET SECURITY

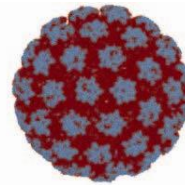
elicit

FEEDBACK

Routes of HPV Transmission

Probability of HPV transmission per coital act ranged from 5 to 100% (median = 40%)

Primary



Less Common

Sexual Routes

Genital Contact

- sexual intercourse
- genital-genital
- manual-genital
- oral-genital

Most important risk factor is the number of sex partners (lifetime and recent)

Non-sexual Routes

Extragenital

- fomites (?)
 - undergarments
 - surgical gloves
 - biopsy forceps

Hypothesized
surgical gloves,
biopsy forceps

Vertical

mother
↓
neonate
(at birth)

↓
respiratory
papillomatosis

Rare; types 6 & 11

HPV TRANSMISSION

- Oral lesions are transmitted through orogenital sexual contact.
- The presence of lesions in children should raise the possibility of sexual abuse, although it is possible that HPV may be transmitted by non-sexual contact.
- Recent evidence supports their horizontal, mouth-to-mouth, transmission.
- asymptomatic patients < patients with clinical lesions



- Family members of people with genital warts are not at additional risk in personal close contacts.
- **Recurrent laryngeal papillomatosis may occur in adults with oral sex.**
- Newer studies suggest a vertical transmission rate of approximately 20–30%. The majority of neonatal infections are cleared by the first year of life, with one study showing a 100% clearance rate
- **Role of C/S in prevention of baby infection is unknown and not recommended.**



HPV Occupational Exposure

- Electrosurgical and laser
 - *The first report was a 44-year-old surgeon*
 - *The second case report was a 28-year-old gynecologic surgical nurse*

***Clinical
manifestation***



HIV TEST



The most common intraoral sites of involvement include the labial mucosa, lingual frenulum and soft palate

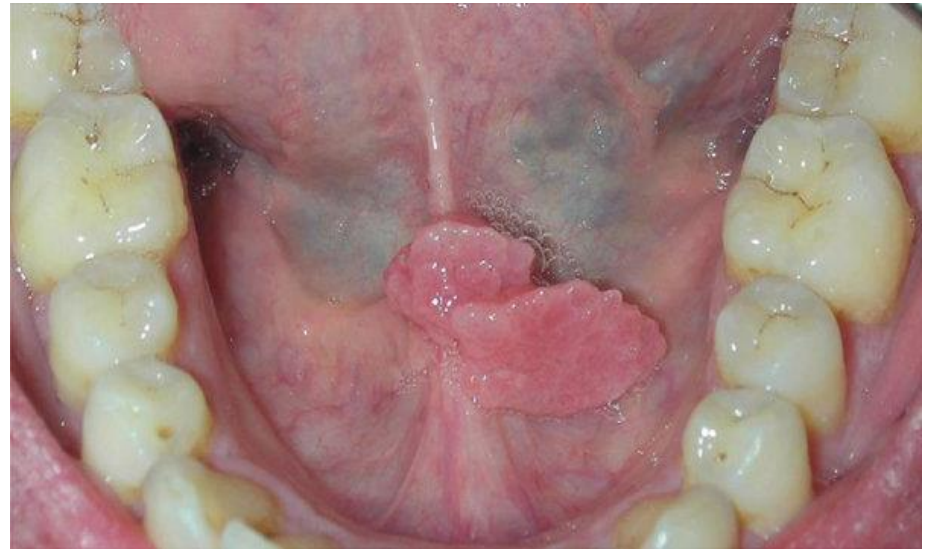


Figure 5: Condyloma accuminata in a HIV positive patient.

Recommended and Alternative Regimens for Treatment of External Anogenital Warts

Recommended Regimen	Dosing
Imiquimod 5% cream	Topically every night at bedtime for 3 times/wk up to 16 wk
Imiquimod 3.75% cream	Topically every night at bedtime up to 16 wk
Podofilox 0.5% solution or gel	Topically twice daily × 3 d followed by 4 d off for up to 4 cycles
Sinecatechins 15% ointment	Topically 3 times daily, for up to 16 wk
Bichloroacetic acid 80%–90%	Applied once every 1–2 wk
Cryotherapy	Applied once every 1–2 wk
Surgical removal	
Trichloroacetic acid 80%–90%	Applied once every 1–2 wk



HPV VACCINE


GARDASIL®

Vaccin Papillomavirus Humain [Types 6, 11, 16, 18] [Recombinant, adsorbé]
Humaner Papillomvirus-Impfstoff [Typen 6, 11, 16, 18] [rekombinant, adsorbiert]
Humaan papillomavirusvaccin [type 6, 11, 16, 18] [recombinant, geadsorbeerd]

Suspension injectable en
seringue préremplie.
1 seringue préremplie unidose
de 0,5 ml avec dispositif de
protection de l'aiguille et 2 aiguilles.
Voie intramusculaire (IM)

Injektionssuspension in einer Fertigspritze
1 Dosis zu 0,5 ml in einer Fertigspritze
mit Kanülenschutzvorrichtung
und 2 Kanülen
Intramuskulär (i.m.) verabreichen

Suspensie voor injectie in een
voorgevulde injectiespuit met
beschermingsmiddel tegen
de naald en 2 naalden
Intramusculair (i.m.) gebruik
1 dosis, 0,5 ml




sanofi pasteur MSD

Ne pas confondre avec les vaccins Gardasil® 2 et Gardasil® 9. Gardasil® 2 est un vaccin à base de virus inactivés. Gardasil® 9 est un vaccin à base de virus recombinants. Gardasil® 2 et Gardasil® 9 ne sont pas interchangeables. Gardasil® 2 et Gardasil® 9 ne sont pas recommandés pour les personnes âgées de 16 ans et plus. Gardasil® 2 et Gardasil® 9 ne sont pas recommandés pour les personnes souffrant d'une infection à virus du papillome humain (VPH) persistante. Gardasil® 2 et Gardasil® 9 ne sont pas recommandés pour les personnes souffrant d'une infection à virus du papillome humain (VPH) persistante.

Ne pas confondre avec les vaccins Gardasil® 2 et Gardasil® 9. Gardasil® 2 est un vaccin à base de virus inactivés. Gardasil® 9 est un vaccin à base de virus recombinants. Gardasil® 2 et Gardasil® 9 ne sont pas interchangeables. Gardasil® 2 et Gardasil® 9 ne sont pas recommandés pour les personnes âgées de 16 ans et plus. Gardasil® 2 et Gardasil® 9 ne sont pas recommandés pour les personnes souffrant d'une infection à virus du papillome humain (VPH) persistante. Gardasil® 2 et Gardasil® 9 ne sont pas recommandés pour les personnes souffrant d'une infection à virus du papillome humain (VPH) persistante.



6

11

16

18

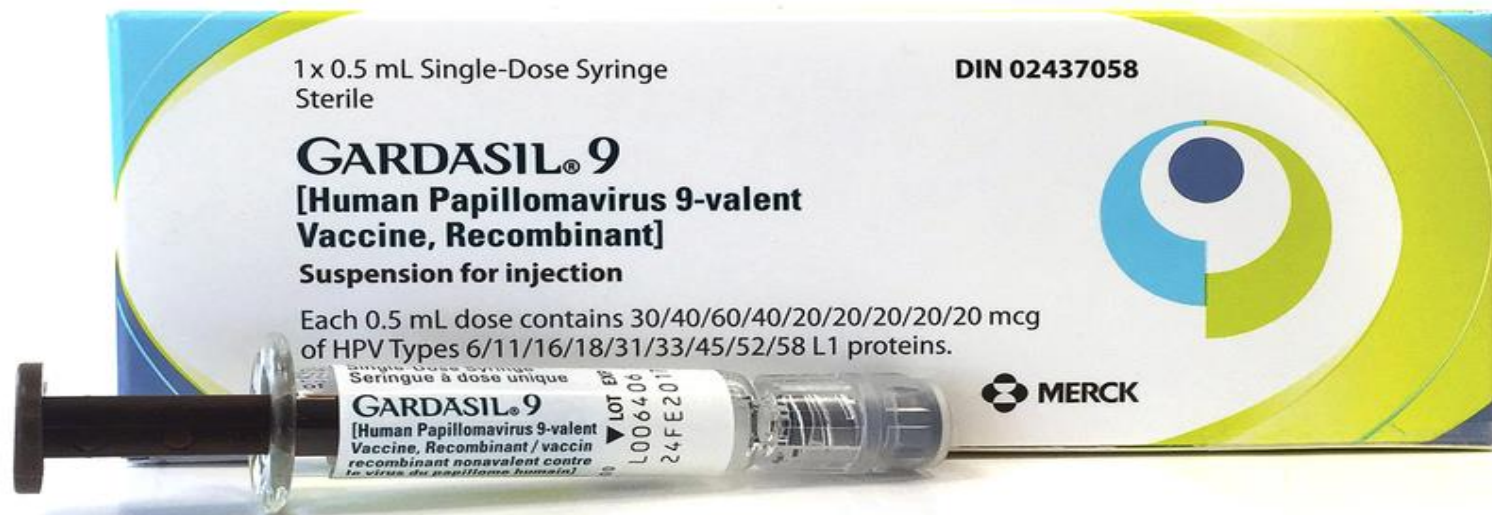
31

33

45

52

58



預防90%
子宮頸癌



世界衛生組織
WHO認可



9歲以上
男女適用



2億支
已被接種



6個月內注射
3針長效預防



Dosage and Administration

- intramuscularly (IM)
- deltoid region
- anterolateral area of the thigh
- 0.5 mL doses
- 0,2,6 month
- stored at 2-8 C
- Observation for 15 minutes after administration .
- If the vaccine schedule is interrupted, the vaccination series does not need to be restarted.



Immunogenicity of 2 Doses of HPV Vaccine in Younger Adolescents vs 3 Doses in Young Women

[illegible]

Precautions and Contraindications

- persons with a history of **immediate hypersensitivity to any vaccine component.**
- persons with a history of immediate **hypersensitivity to yeast.**
- ***HPV vaccines are not recommended for use in pregnant women .***
- If a woman is found to be pregnant after initiating the vaccination series, the remainder of the 3-dose series should be delayed until completion of pregnancy.
- Pregnancy testing is not needed before vaccination.
- If a vaccine dose has been administered during pregnancy, no intervention is needed.

Human Papillomavirus Vaccine Recommendations From the Advisory Committee on Immunization Practices

Population PLHA	Age Group, y	Recommendation
Females	11–12 (may start at 9)	Routine vaccination with either 2vHPV, 4vHPV, or 9vHPV
	13–26	Routine vaccination with either 2vHPV, 4vHPV, or 9vHPV ^a
Males	11–12 (may start at 9)	Routine vaccination: 4vHPV or 9vHPV
	13–21	Routine vaccination: 4vHPV or 9vHPV
	22–26	4vHPV or 9vHPV may be administered
MSM and HIV ⁺	22–26	Routine vaccination: 4vHPV or 9vHPV

**2 doses
younger
than 15**

9 of 12 studies reported decreased disease recurrence and decreased disease burden



THANKS