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HPV and Head & Neck Cancers: What Every Clinician Should Know

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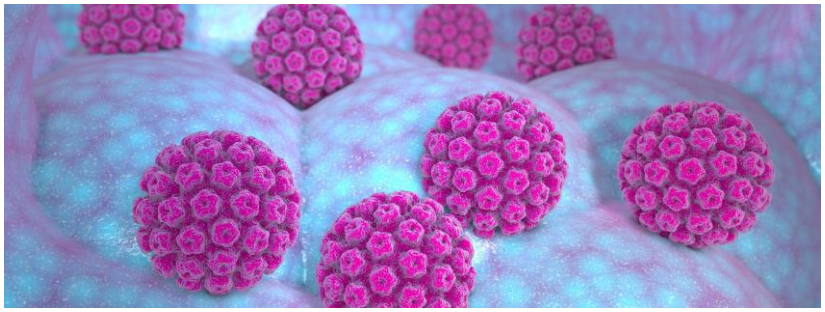
Objectives

- Understand HPV biology and transmission
- Recognize epidemiology and risk groups
- Identify symptoms and diagnostic approach
- Review treatment principles and toxicities
- Discuss vaccination and prevention strategies

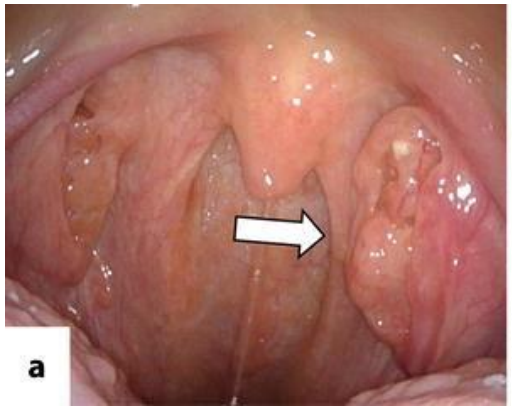
What is HPV?

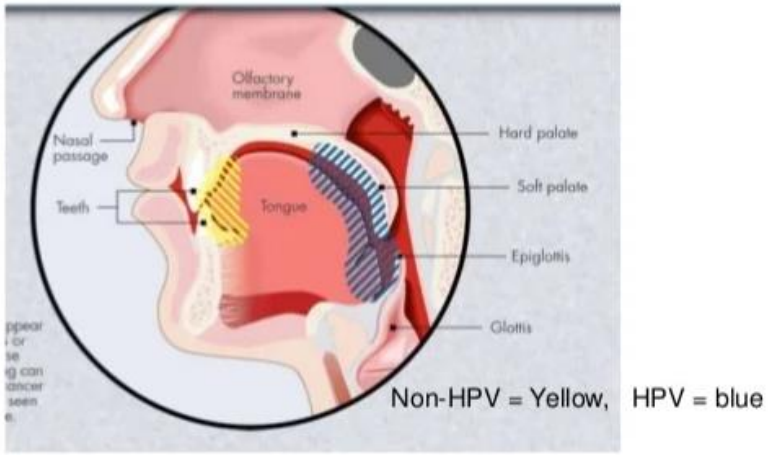


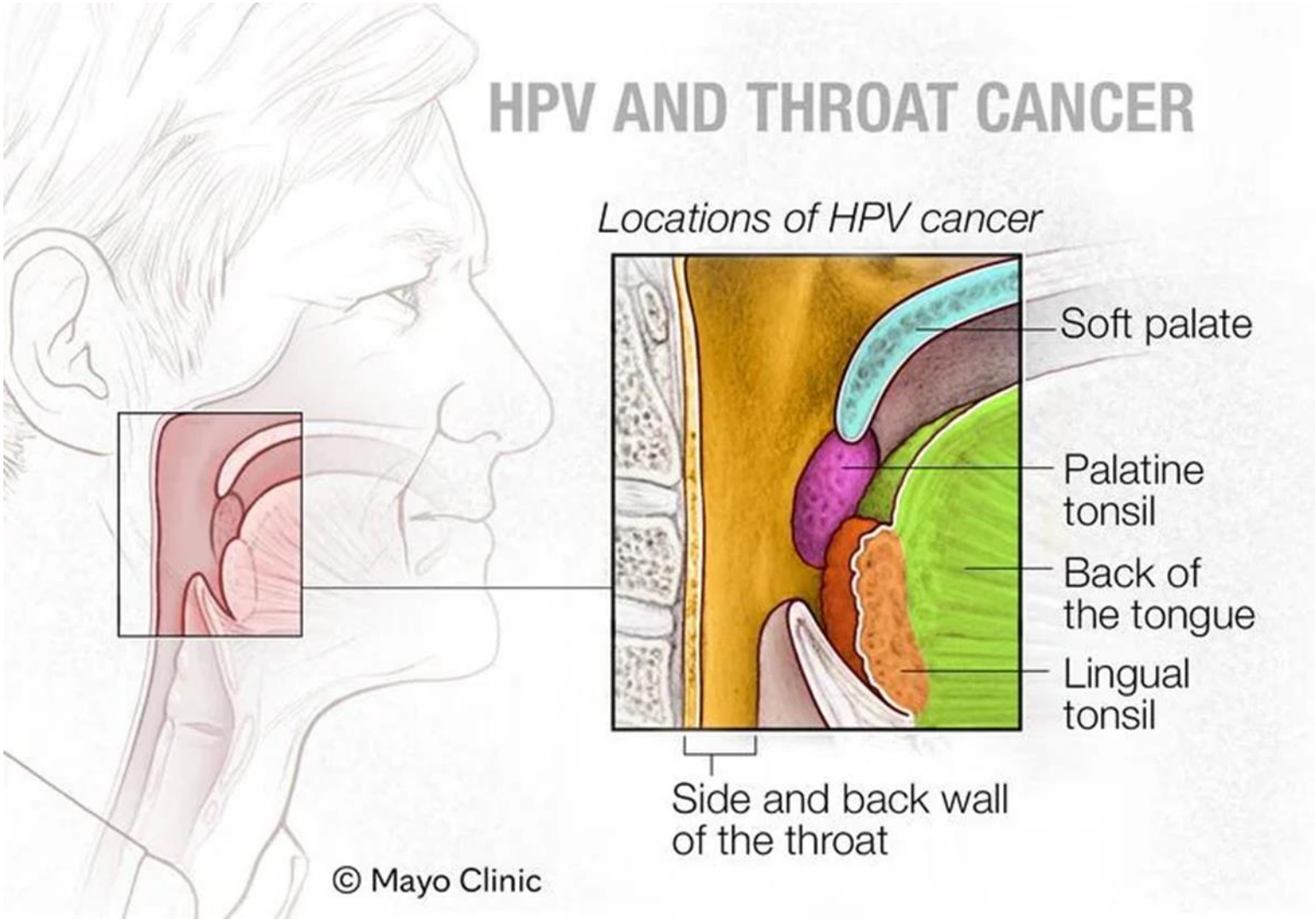
- Over 200 HPV subtypes; ~14 high-risk oncogenic types
- HPV-16 responsible for most oropharyngeal cancers
- Spread via intimate skin-to-skin contact
- Often asymptomatic and clears spontaneously

Why the Oropharynx?

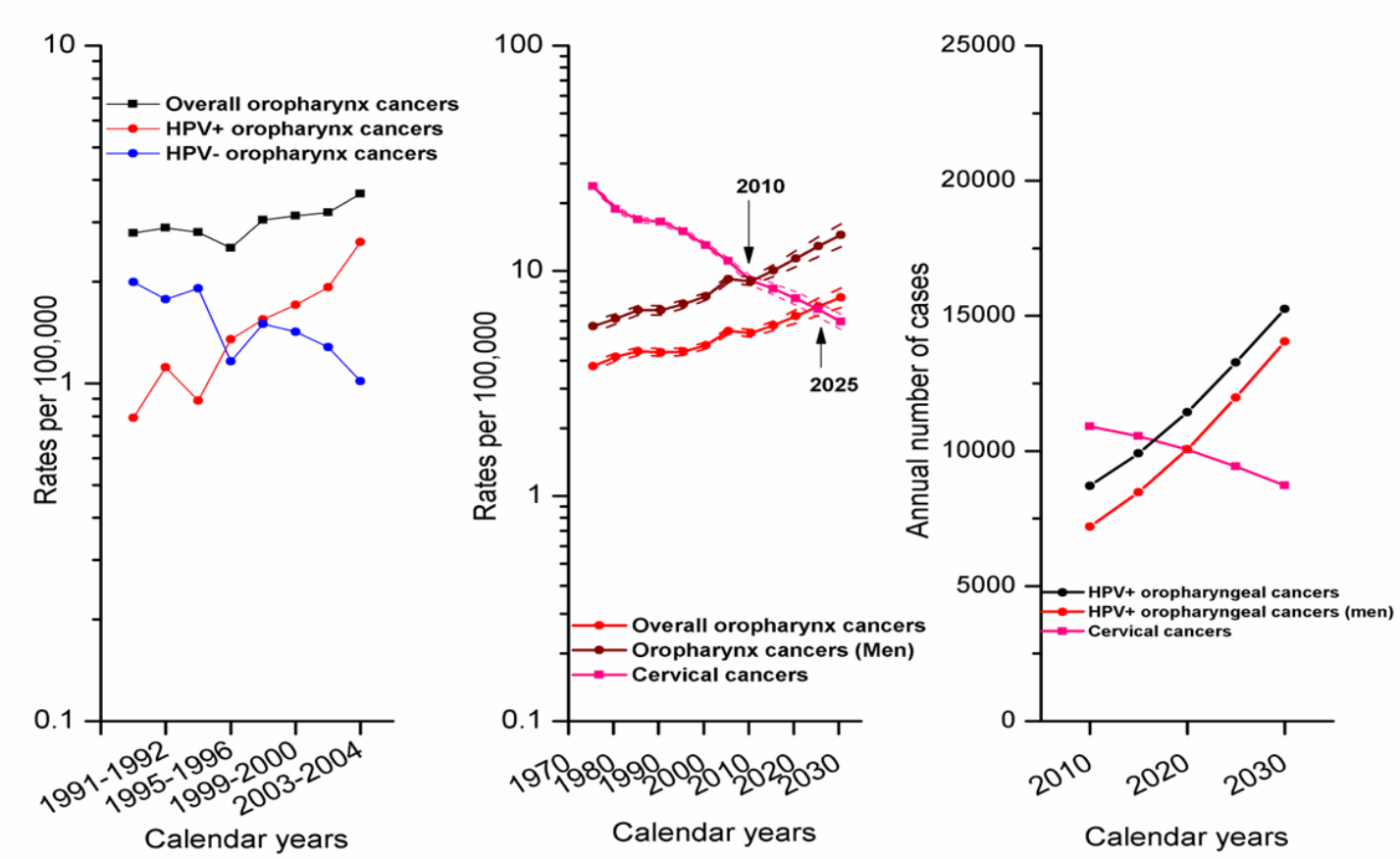
- Tonsillar crypt epithelium vulnerable to HPV integration
- Immune-privileged microenvironment
- Long latency from infection to malignancy (10–30 years)






HPV AND THROAT CANCER
Locations of HPV cancer
Soft palate
Palatine tonsil
Back of the tongue
Lingual tonsil
Side and back wall of the throat
© Mayo Clinic

HPV-Oropharynx cancer incidence surpasses cervical cancer incidence



ChaturvediA. JCO 2010

Risk Factors

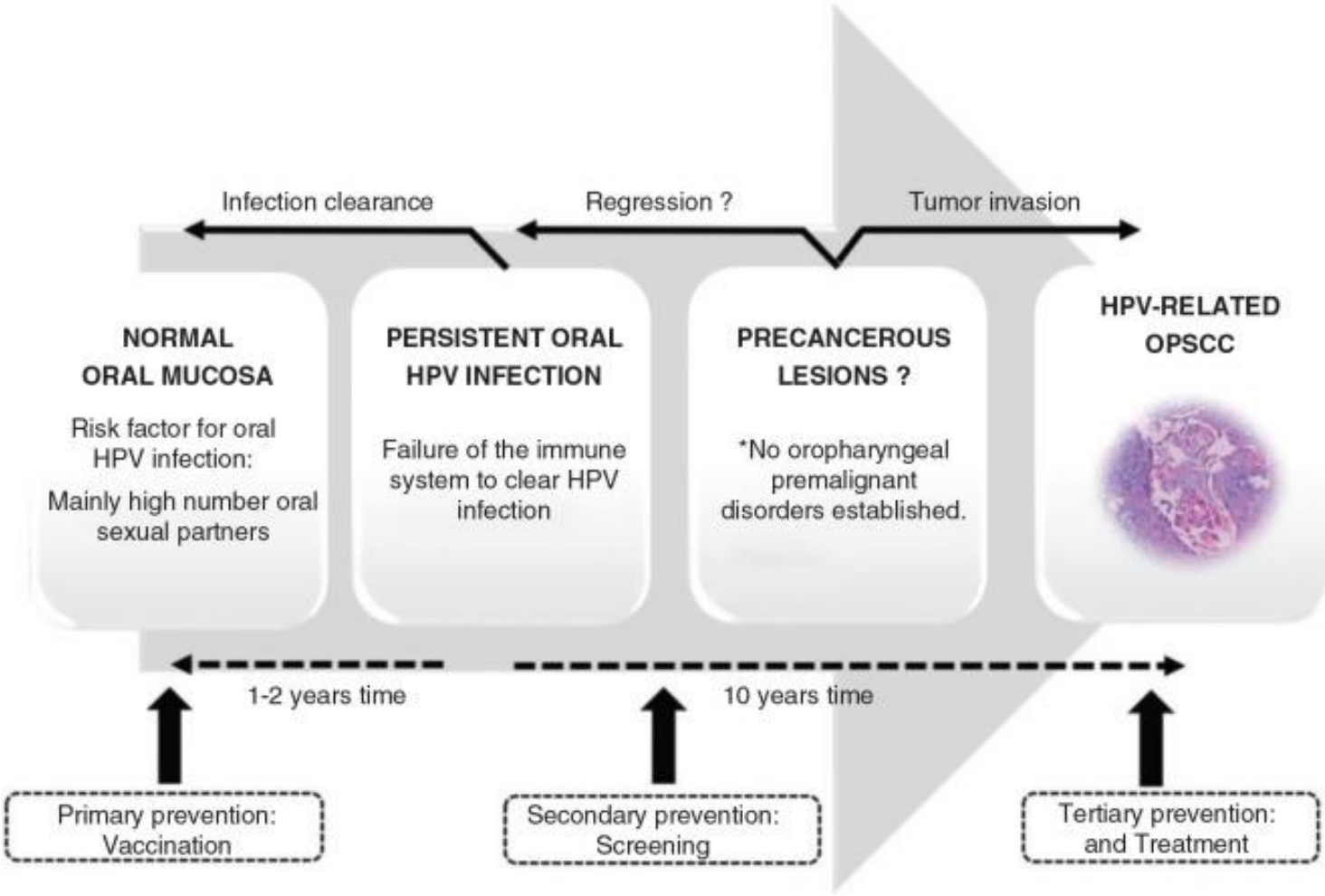
- Number of lifetime oral sexual partners
- Male sex
- Immunosuppression
- History of other HPV-related disease

FACT: HPV is the **most common sexually transmitted infection** in the world. It is estimated that **75%** of sexually active Canadians will have at least one HPV infection in their lifetime.

Learn more

Oropharynx Cancer

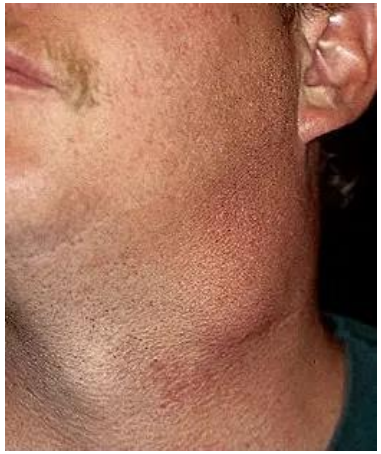
	HPV-negative	HPV-positive
Age	Older (> 60 years)	Younger/middle-age
Risk-factors	Tobacco/Alcohol	Oral sex
Etiology	Mutation-driven	Virus-driven
P53 gene	Altered	Wild-type
Male: female ratio	1–2:1	5:1
Ethnic predilection	All	White/Caucasian
Co-morbidities	Common	Rare
Education level	Low	High
Incidence	Decreasing	Increasing

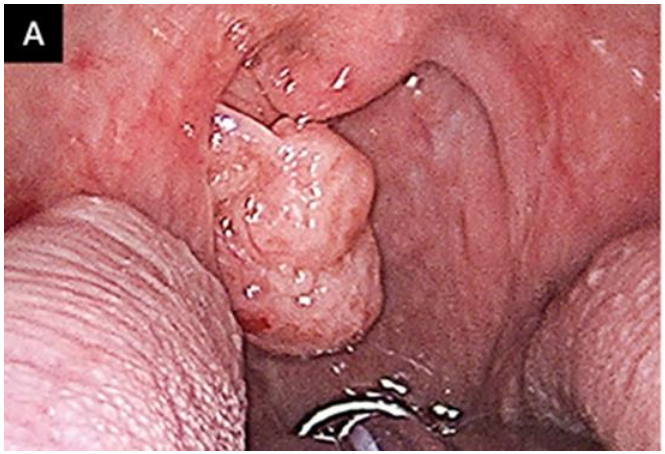


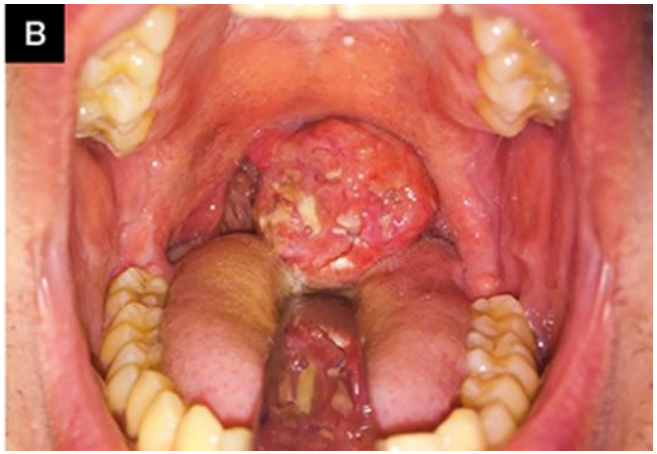
REVIEWS Volume 28, Issue 10P2386-2398October 2017

Presenting Symptoms

- Painless neck mass (most common)
- Persistent sore throat or dysphagia
- Referred otalgia
- Voice change or weight loss (late)

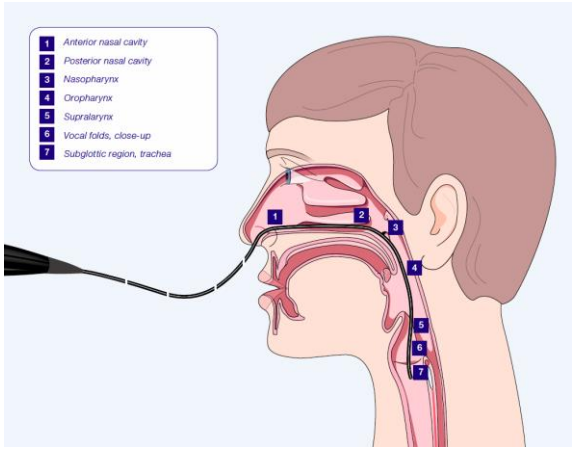


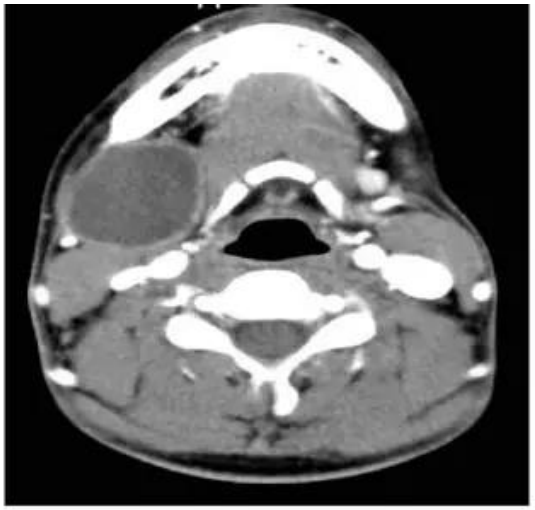


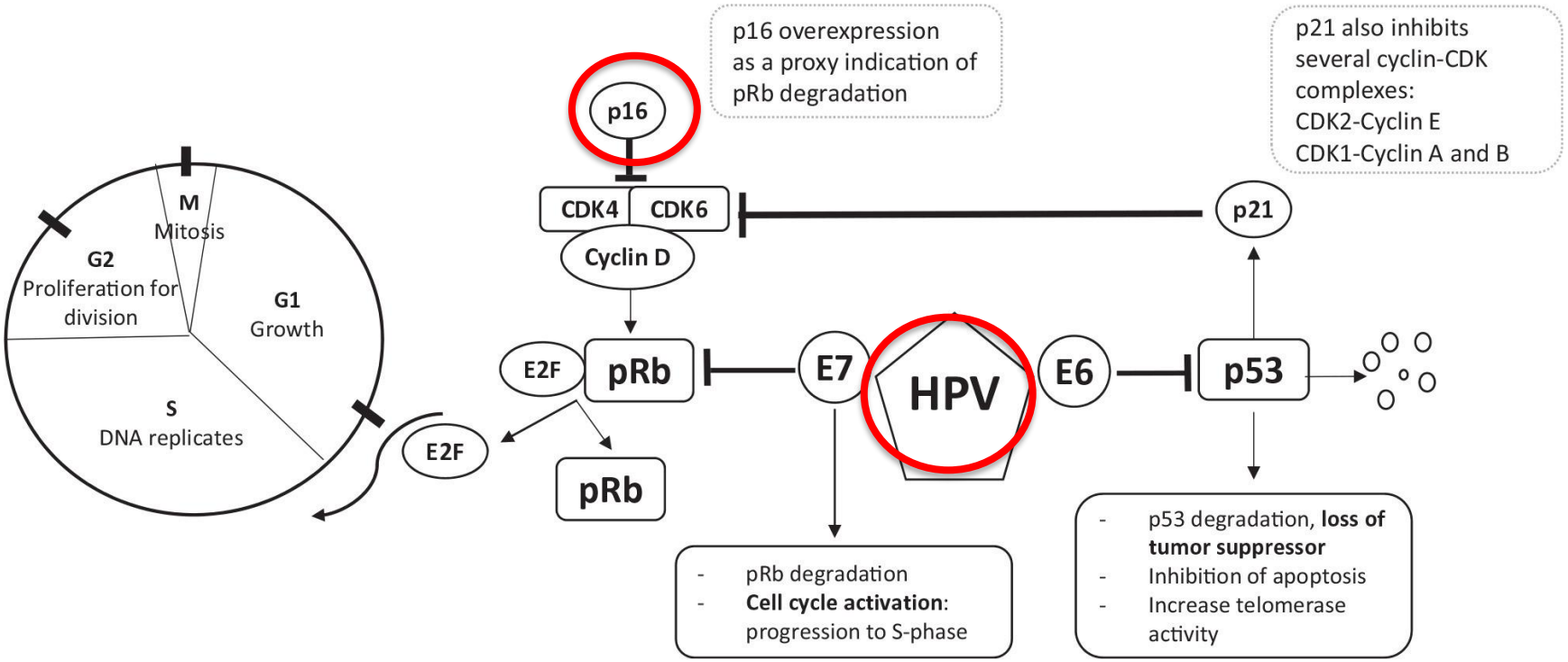


Clinical Examination and Workup

- Thorough head & neck exam including oropharynx
- Nasopharyngoscopy
- Imaging: CT/MRI and PET
- Biopsy and HPV testing (p16 IHC)





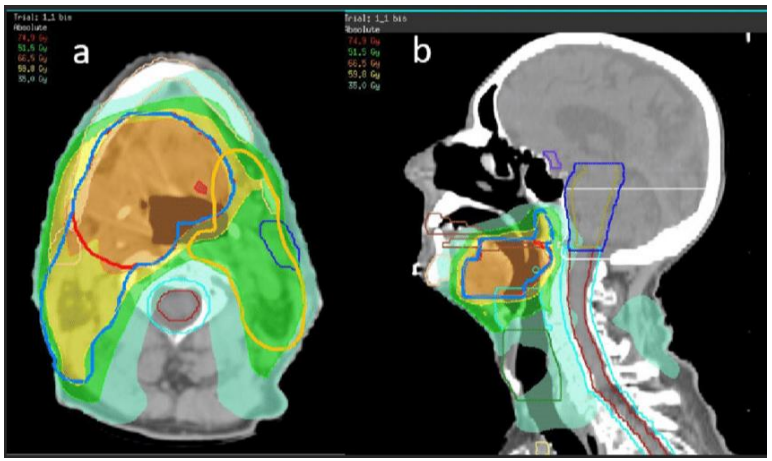

p16 overexpression
as a proxy indication of
pRb degradation
p21 also inhibits
several cyclin-CDK
complexes:
CDK2-Cyclin E
CDK1-Cyclin A and B
p16
CDK4
CDK6
Cyclin D
p21
M
Mitosis
G2
Proliferation for
division
G1
Growth
S
DNA replicates
E2F
pRb
E7
HPV
E6
p53
E2F
pRb
- pRb degradation
- Cell cycle activation:
progression to S-phase
- p53 degradation, loss of
tumor suppressor
- Inhibition of apoptosis
- Increase telomerase
activity

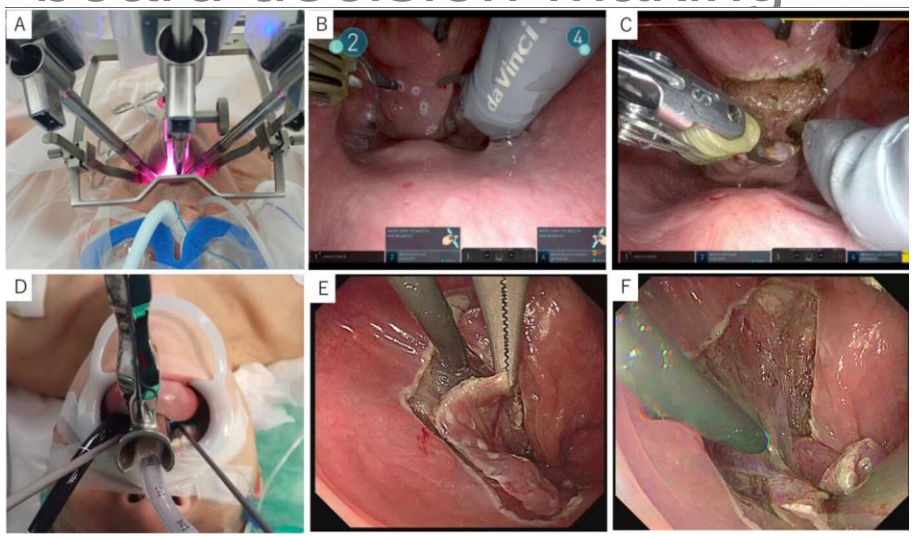
Staging and Prognosis

- Separate AJCC staging system for HPV+ disease
- Significantly improved survival compared to HPV-negative cancers
- Excellent response to radiation and chemotherapy

Treatment Overview

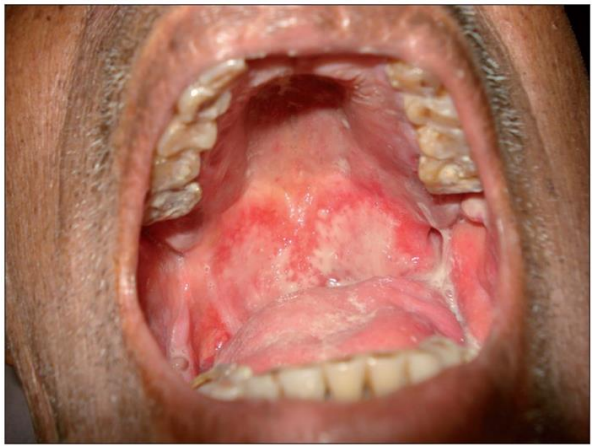
- Radiation therapy ± chemotherapy
- Transoral robotic or laser surgery in selected cases
- Multidisciplinary tumor board decision-making

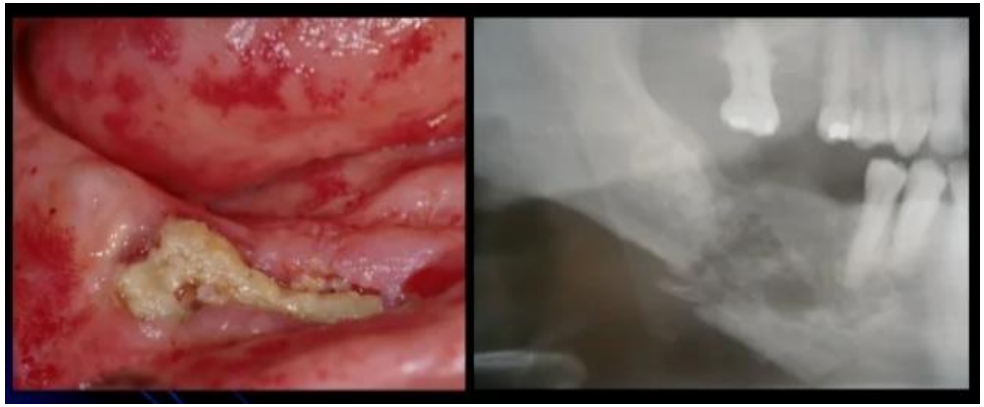




Treatment Toxicities and Functional Impact

- Dysphagia and aspiration risk
- Xerostomia and dental decay
- Speech and taste changes
- Fatigue and psychosocial impact





Role of Allied Health and Nursing

- Speech-language pathology for swallowing rehabilitation
- Dietitians for nutrition optimization
- Dental professionals pre/post radiation
- Nursing for symptom management and education

Survivorship and Long-Term Follow-Up

- Swallow function monitoring
- Dental and thyroid surveillance
- Psychosocial support
- Recurrence surveillance

STUDY PROTOCOL Open Access

The SHARE study – Survivorship After Head and Neck Cancer: evaluating patient care and adherence to follow up in Ontario, Canada: study protocol for a randomized controlled trial

Billy Tran[1], Agnieszka Dzioba[1,5], Jennifer Baker[1], Adam Mutsaers[2,5], Anthony C. Nichols[1,5], Adrian Mendez[1,5], Chris D. Goodman[2,5], David A. Palma[2,5], Eric Winquist[3,5], Jennifer D. Irwin[4], Kevin Fung[1,5], Paul Stewart[3,5], Pencilla Lang[2,5], Rohann J. M. Correa[2,5], Sara Kuruvilla[3,5], Sylvia Mitchell[2], Timothy Phillips[1,5] and S. Danielle MacNeil[1,5*]

Prevention: HPV Vaccination

- 9-valent vaccine protects against high-risk HPV types
- Recommended for boys and girls starting at age 9–12
- Catch-up vaccination into adulthood
- Safe, effective, and cancer-preventing

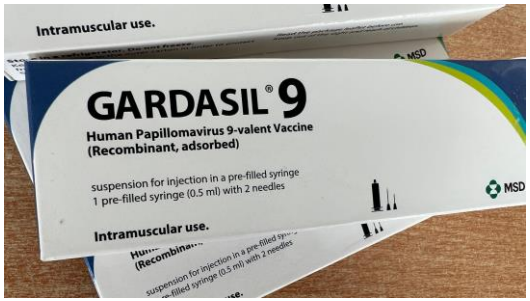


Table 3. NACI recommendations on HPV immunization schedules

Group(s)	NACI guidelines on HPV immunization schedules
9 to 20 years [a]	1-dose [b] HPV vaccine schedule with 9vHPV.
21 to 26 years [a]	2-dose HPV vaccine schedule with 9vHPV; doses administered at least 24 weeks apart.
27 years and older [a]	2-dose HPV vaccine schedule with 9vHPV; doses administered at least 24 weeks apart.
9 years and older [a] who are immunocompromised or living with HIV	3-dose HPV vaccine schedule [c] with 9vHPV.

[a] Recommended schedule is based on age at initiation of vaccination.

[b] A 2-dose schedule may be considered on an individual basis for individuals 9 to 20 years of age. When 2 doses are offered, doses should be administered at least 24 weeks apart.

[c] Individuals recommended to receive HPV vaccine who are immunocompromised, including individuals living with HIV, should receive a 3-dose HPV vaccine schedule with a nonavalent HPV vaccine. The minimum interval between the first and second doses of vaccine is 4 weeks (1 month), the minimum interval between the second and third doses of vaccine is 12 weeks (3 months), and the minimum interval between the first and last doses is 24 weeks (6 months).

Table 10: HPV-9 two dose immunization series for:

- healthy grade 7 to 12 students who are <15 years of age
- healthy youth 9 to 14 years of age (who meet high risk eligibility criteria)

Recommended Intervals	Minimum Intervals
1st dose 2nd dose, 6 months after 1st dose	1st dose 2nd dose, 24 weeks after 1st dose

Notes:

- Immunocompromised or immunocompetent HIV-infected individuals require 3 doses (see Table 11)
- In healthy individuals 15 years of age and older who received the first dose between 9 to less than 15 years of age, a 2 dose schedule can be used

Table 11: HPV-9 three dose immunization series for:

Healthy:

- grade 7 to 12 students who are ≥15 years of age
- males 15 to 26 of age (who meet high risk eligibility criteria)

Immunocompromised or immunocompetent HIV-infected:

- grade 7 to 12 students
- males 9 to 26 years of age (who meet high risk eligibility criteria)

Recommended Intervals	Minimum Intervals
1st dose 2nd dose, 2 months after 1st dose 3rd dose, 4 months after 2nd dose	1st dose 2nd dose, 4 weeks after 1st dose 3rd dose, 12 weeks after 2nd dose and 24 weeks after the 1st dose

Addressing Vaccine Hesitancy

- Focus on cancer prevention, not sexual transmission
- Normalize HPV as common infection
- Use clear, confident recommendations

Talking to Patients About HPV-Related Cancer

- Use non-stigmatizing language
- Avoid focusing on past behaviors
- Reassure about prognosis and treatment success

Key Takeaways for Practice

- HPV is the leading cause of oropharyngeal cancer
- Neck mass in adult = rule out HPV-related cancer
- Excellent outcomes with treatment
- Vaccination is primary prevention

References

- American Head and Neck Society (AHNS)
- CDC HPV and Cancer resources
- Canadian Cancer Society HPV information
- WHO HPV Information Centre
- NCCN Guidelines
- NACI
- AJCC 8th edition staging manual

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