Disclosure & Responsibility Statement

The educational webinar is sponsored by an educational grant from the BCDHA.

The presenter receives an honorarium.

There are no constraints on the presentation and the opinions expressed by the presenter do not necessarily reflect those of the BCDHA.

Information is based on current scientific literature and research.

The focus of the webinar series is to elevate awareness and define our role and responsibility to elevate awareness and knowledge of the escalating trend of HPV-related head and neck cancers.

Learning Outcomes

• Recognize the risk factors pertaining to HPV-related oropharyngeal cancer specifically
• Review the anatomical structures of the head and neck strongly associated with HPV-related disease
• Identify the screening techniques and subtle symptoms associated with HPV-related oropharyngeal cancer

Learning Outcome

Recognize the risk factors pertaining to HPV-related oropharyngeal cancer

Risk Factors for HPV-Positive OPSCC

- Many oropharyngeal cancers are still related to alcohol and tobacco use; however this is changing in economically developed areas of the world.
- Infection with oncogenic human papillomavirus (HPV), especially Type 16, is a risk factor for some types of head and neck cancers, particularly oropharyngeal cancers that involve the tonsils or the base of the tongue.
- Most likely explanation for this distinct subset of head and neck cancers associated with HPV is a sexually acquired oral HPV infection that is not cleared, persists and evolves into a neoplastic lesion.
- Oral HPV infections acquired through oral sex appear to be the principal risk factor for HPV-associated oral cancers.
- Sexual behavior is now established as the most strong and consistent risk factor for oropharyngeal cancer.

Risk Factor: Oral HPV Infection

- Case-control studies have established oral HPV infection as the principal risk factor for HPV-positive oropharyngeal cancer.
- Oral oncogenic HPV infection prevalence was shown to peak at ages 25 to 30 years and 55 to 60 years; prevalence among U.S. men and women aged 14 – 69 was 6.9%.
- Average latency period for HPV-positive oropharyngeal cancer of approximately 10 – 30 years, assuming either peak in prevalence could contribute to risk.

Condyloma Acuminatum

Cluster of multiple, pink, slightly papillary nodules attached with broad base
Painless, persistent, more common in young adults
HPV 6,11, 16 and 18; STI
Lips, tongue and soft palate
Also known as a venereal wart
Local excision, laser ablation
Re-inoculation common amongst sexual partners
HPV & Head and Neck Cancer
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Risk Factor: Sexual Behaviours

• Sexual behavior is now established as the most strong and consistent risk factor for oropharyngeal cancer.8
  • Lifetime number of oral sexual partners seems to be the behavioral measure most strongly, consistently, and specifically associated with oropharyngeal cancer; “Intimate sexual contact” oral genital contact is the highest transmission pathway known; in contrast HPV-negative OPSCC not associated with sexual activity9,10
  • Can HPV be transmitted through ‘French kissing’; Oral HPV infection associated with open-mouthed kissing is difficult to reliably assess as an independent exposure to oral HPV based on limited evidence so far11-13
  • Increased risk among men, with a history of same-sex sexual contact8
  • Studies report reduced seroconversion rates males vs. females; females acquire infection early and rapidly, seroconvert infection into a systemic antibody; males take a far greater number of sexual partners to seroconvert14,15

Association of lifetime number of oral sex partners with oral HPV prevalence15

Additional Risk Factors

Nonsexual Mode of Transmission

• Finnish Family HPV Study evaluated oral samples from 331 children from birth through 51 months; oral HPV prevalence varied from 8.7% at 36-month visit to 22.8% at birth.16
• Meta-analysis of 3,128 shown that children born to HPV-positive mothers were 33% more likely to be HPV positive; risk even higher (45%) with high-risk HPV infections; vertical transmission most likely during birth17
• Another study reported 32% of children born to mothers with HPV cervical infections at time of delivery had HPV detectable in their oral mucosa; HPV 16/18 was most prevalent (81%)18

Previous History of HPV

• Women previously treated have a slightly higher risk of reactivation of HPV; however most likely HPV clearance and a new infection through exposure has occurred

Immunodeficiency/Immunosuppression/Transplant Patients19

Marijuana/Smoking/Smokeless Tobacco Use

• Researchers have identified the molecular mechanism activated by the presence of tetrahydrocannabinol (THC) in the bloodstream capable of accelerating tumor growth in HPV-positive OPSCC20
• “Chewing tobacco may cause abrasions and weaken mucosal surfaces increasing susceptibility to HPV infections and development of precancerous and cancerous lesions”21

Oral hygiene

• Oral wounds can provide an access point for the virus to the basal layer of the mucosal epithelium; microscopic lesions are found in gingival inflammation22
Learning Outcome

- Review the anatomical structures of the head and neck strongly associated with HPV-related disease.

Preference of HPV for the Oropharynx

- May be related to histological similarities of tonsillar tissue to the cervical mucosa.
- Tonsillar crypt epithelium may foster survival of HPV; invaginations may favour virus capture and maintenance.
- Defined by its boundary with the oral cavity posterior to the sulcus terminalis.
- Base of the tongue, soft palate, uvula and tonsillar region, which includes the fossa and the anterior and posterior pillars collectively forming a ringed arrangement known as Waldeyer’s ring.

Waldeyer’s Ring

Nodal Spread in Oropharyngeal Cancer

- Lymph nodes within these regions are at greatest risk of metastases from cancers among oral cavity and oropharynx
- Approximately 70% or more of patients with advanced base-of-the-tongue cancers have ipsilateral(same side) cervical nodal metastases; 30% or fewer of such patients have bilateral, cervical lymph-node metastases.
- The cervical lymph nodes involved commonly include levels II, III, IV, and V and retropharyngeal lymph nodes.

Screening for HPV-Related Oral/Oropharyngeal Cancer

- Opportunistic oral cancer screening is always indicated (extraoral/intraoral examination) however limited in HPV origin disease; palpation of the neck has never been more important.
- Visual and tactile exam preceded by a history taking including objective/subjective symptoms that may not be visible or palpable.
- Most of the symptoms associated with a developing HPV-positive infection are discovered by verbal inquiry due to limited visual acuity in high-risk anatomical areas.
- “Anyone old enough to have engaged in sexual behaviours which are capable of transferring this very ubiquitous virus needs to be screened annually for oral cancer.”

Systematic Examination of Lymph Nodes and Extraoral Landmarks

1. Submental
2. Submandibular
3. Anterior cervical chain
4. Supraclavicular
5. Occipital
6. Posterior auricular
7. Anterior auricular
8. Parotid
9. Sternocleidomastoid muscle
10. Posterior superficial cervical chain
11. Posterior cervical spinal nerve chain
Extraoral Palpation of Submandibular Nodes

**Palpation Technique**
- Initial bilateral palpation (rolling stroke, piano playing stroke)
- **Chin down, ear to shoulder; employ unilateral palpation with firm pressure**
- Note any enlargement, tenderness, hardness and asymmetry; nodes should not be clinically palpable or visible
- If enlargement is detected, determine whether fixed or mobile and assess consistency of the node

Extraoral Palpation of Cervical Nodes

**Palpation Technique**
- Palpate the superficial and deep cervical nodes
- With the client looking straight ahead, position the hand to palpate the entire chain anterior to the sternocleidomastoid muscle (SCM)
- Instruct the client to turn the head to reposition the SCM and allow deeper palpation of the chain of lymph nodes
- A palpable tender node may be result of past chronic infection

Extraoral Palpation of Supraclavicular Nodes

**Palpation Technique**
- **Location** - superior to the clavicle in the supraclavicular fossa directly above the collarbone
- **Technique** - positioned behind the client
- Bilateral palpation; shoulders raised and rounded forward
- Enlargement should always be investigated
  - Prevalence in malignancy possess a rate of 54 – 84% according to biopsy series reports

Clinical Considerations: Supraclavicular Nodes

**Referral Management**
- Among this group of lymph nodes, supraclavicular nodes have the greatest potential to likely be malignant
- An enlargement that persists more than 14 days should always be investigated; a hard, fixed node should be referred
- Prevalence in malignancy possess a rate of 54 – 84% according to biopsy series reports
HPV & Head and Neck Cancer
Part II: The Impact on Screening Practices

**Lymphadenopathy Considerations**

- A persistent neck lump (fixed, firm mass) in an adult should be considered malignant until proven otherwise. 21, 26
- According to HPV tumor status, neck mass was significantly more common in patients with HPV-positive OPSCC vs HPV-negative OPSCC (51% vs 18%, respectively) 29
- Patients with HPV-positive OPSCC are more likely to present with a neck mass indicative of regional disease; patients with HPV-negative OPSCC with symptoms associated with primary tumor site. 29
- HPV-positive OPSCC often originating in tonsillar crypts resulting in early cervical metastasis whereas OPSCC is more likely to be locally invasive correlating with initial symptoms at primary tumor site. 29

**The Subtle and Life-Saving Symptoms**

- Continuous sore throat; persistent infection
- Pain when swallowing or difficulty swallowing
- Unilateral ear pain; ringing in the ears or trouble hearing
- Pain when chewing
- Non-healing oral lesions
- Bleeding in the mouth or throat
- Hoarseness
- A lump in the throat or the feeling that something is stuck in the throat
- Continual lymphadenopathy
- Unexplained weight loss
- Trouble breathing, speaking, slurred speech
- Tongue that tracks to 1 side when stuck out
- Asymmetry in tonsillar area
- Persistent neck masses despite antibiotic therapy

**Summary of Key Concepts Learned**

- A sexually acquired oral HPV infection is the most consistent risk factor
- A persistent infection with a high risk strain has the greatest ability to malignant transformation
- Anyone old enough to have engaged in sexual activity should be screened annually
- A persistent neck mass should always be investigated further
- Palpation of the neck has never been more important
- A neck mass is significantly more common in HPV-positive OPSCC vs HPV-negative OPSCC

**References:**

References: [All sites accessed April 2021]


Part III:
HPV Risk Management and Prevention Strategies

• Effectively communicate risk management strategies to the dental hygiene client
• Understand the indication, efficacy, characteristics and safety profile of the HPV vaccination
• Provide educational resources for the dental hygiene client