

Oral Cancer Screening

In 2014, close to 43,250¹ Americans and more than 4,000 Canadians² will be diagnosed with oral or pharyngeal cancer. These diagnoses will lead to more than 8,000 deaths in the United States and approximately 1,150 deaths in Canada.³ In 2010, it was estimated that \$3.2 billion was spent in the United States each year on the treatment of head and neck cancers.¹ The overall incidence in the United States is about 16.5 per 100,000 men and 6.2 per 100,000 women with the median age at diagnosis of oral or pharyngeal cancer was 62 years from 2007 to 2011.⁴

The well-documented risk factors for oral cancer in American men and women are tobacco, smokeless tobacco, and alcohol use. An increased risk of developing squamous cell carcinoma of the oropharynx has also been associated with HPV16 infections.⁵ The survival rate from this disease is approximately 57%; this has remained relatively constant over decades. Historically, the survival rate was about 50%. Therefore 57% is an improvement, but this increase is thought to be secondary to the increased incidence of HPV16-related malignancies, which seem to be more responsive to existing treatment modalities. The current available data seem to support that a change in etiology and not improved early discovery or treatments has led to this survival increase. Approximately 94% of all oral cancers are squamous cell carcinomas. Less common oral cancers include mucoepidermoid carcinoma, adenoid cystic carcinoma, and, rarely, malignant melanoma.⁶

The warning signs of oral cancer can be summarized as follows:

1. an ulceration in the mouth that does not heal (most common symptom)
2. an area of leukoplakia (white in color) or erythroplakia (red in color) on the gingiva, tongue, tonsil, or oral mucosa that persists
3. a lump or thickening in the cheek
4. a sore throat or globus sensation (feeling that something is caught in the throat)
5. difficulty chewing with or without dysphagia
6. increasing trismus and or decreasing tongue mobility
7. sensory changes in the tongue or other oral structures
8. swelling of edentulous areas that cause dentures to fit poorly or become uncomfortable
9. increasing tooth mobility or pain associated with the teeth or jaw
10. voice changes
11. a lump or mass in the neck
12. weight loss

The National Cancer Institute defines screening as looking for cancer before a person has any symptoms. The concept is to help find cancer at an earlier stage, assuming that it may be easier to treat. If symptoms have already manifested, the cancer may have already begun to spread.⁷ The World Health Organization (WHO) makes a distinction that early detection of oral cancer using visual inspection of the mouth should be considered a different entity and distinct from an organized screening program.⁸ Given that oral cancer occurs in an area typically accessible to physical examination by the patient, the dentist, the dental specialist, and the physician, visual examination is the most common technique used to detect visible lesions. Other adjuvant diagnostic testing modalities, including toluidine blue staining, brush biopsy, autofluorescence, salivary proteomics, DNA analysis, biomarkers, and spectroscopy, have been advocated for the clinical detection of oral lesions.⁹ The direct-to-patient marketing¹⁰ of some of these adjunctive tests may have increased the public awareness of oral cancer; however, the available literature does not support the fact that such technologies may improve detection of oral cancers and precancerous lesions beyond what a thorough conventional oral examination can provide especially in low risk populations.^{11,12,13,14} The characteristics of a good screening test are as follows:

1. be simple, safe, and acceptable to the public
2. detect disease early in its natural history
3. preferentially detect those lesions that are likely to progress
4. detect lesions that are treatable or where intervention will prevent progression
5. have a high positive predictive value and low false negatives (high sensitivity).⁸

A thorough clinical examination for oral cancer should include the following components:

1. palpate the lymph nodes in the neck and under the mandible
2. visually inspect and palpate the cheeks and lips
3. visually inspect the gingival tissues
4. pull the tongue forward to evaluate the posterior dorsal and ventral surfaces
5. visually inspect and palpate the palate
6. visually inspect the tonsillar and oropharyngeal areas
7. visually inspect and palpate the floor of the mouth

Oral health care providers should be alert for the signs of potentially malignant lesions or early-stage cancers, especially in patients who use tobacco or consume alcohol heavily.^{15, 16} If a suspected oral cancer or pre-malignant lesion is identified during this examination, it requires evaluation by tissue biopsy. This biopsy may be performed by a prosthodontist comfortable with such a procedure dependent upon the location of the identified lesion or referred to an oral and maxillofacial surgeon or otolaryngologist, if indicated. Definitive treatment of a biopsy-confirmed oral cancer may include surgery, radiation therapy, chemotherapy, or a combination of these modalities.



To date, there is not enough evidence to determine if screening using a comprehensive clinical examination as noted above will reduce the death rate for oral cancer, and there is no evidence for other screening methods. It is possible that a comprehensive clinical examination may aid with death rate reduction in high risk patients who use tobacco and alcohol.¹⁷

There is evidence of potential harm associated with routine screening for oral cancer.⁶ The clinician should be aware of the following situations that are unavoidable as a result of routine screening:

1. detection of cases that are already incurable, leading to increased morbidity
2. unnecessary treatment of lesions that would not have progressed (over-diagnosis)
3. psychological consequences of false-positive tests
4. misdiagnosis with resulting under- or over-treatment

Despite the lack of evidence to support large scale oral cancer screening programs in asymptomatic adults, it is the position of the American College of Prosthodontists to provide routine comprehensive oral cancer screenings to their patients as well as inquire about risk factors in their patients.¹⁸ The American College of Prosthodontists annually hosts National Prosthodontics Awareness Week informing the public of oral health care, including oral health care screenings.

References

1. The Oral Cancer Foundation: Oral cancer facts. Available online at www.oralcancerfoundation.org/facts/ Accessed February 9, 2015. Last modified: August 2014
2. Rock L, Tekach E, Laronde D: Oral cancer screening: dental hygienists' responsibility, scope of practice and referral pathway. *Can J Dent Hyg* 2014;48:42-46
3. Canadian Cancer Society's Advisory Committee on Cancer Statistics: Canadian cancer statistics 2013. Toronto, ON, Canadian Cancer Society; 2013. Available online at <http://www.cancer.ca/~media/cancer.ca/CW/publications/Canadian%20Cancer%20Statistics/canadian-cancer-statistics-2013-EN.pdf>. Accessed February 9, 2015
4. Howlader N, Noone AM, Krapcho M, et al (eds): SEER Cancer Statistics Review, 1975-2011. Bethesda, MD, National Cancer Institute. Available online at http://seer.cancer.gov/csr/1975_2011/, based on November 2013 SEER data submission, posted to the SEER web site, April 2014. Accessed February 9, 2015.
5. Mork J, Lie AK, Gattre E, et al: Human papillomavirus infection as a risk factor for squamous-cell carcinoma of the head and neck. *N Eng J Med* 2001;344:1125-1131.
6. Palmer O, Grannum R: Oral cancer detection. *Dent Clin N Am* 2011;55:537-548



References cont.

7. National Cancer Institute: PDQ® Oral Cancer Screening. Bethesda, MD, National Cancer Institute. Available online at: <http://cancer.gov/cancertopics/pdq/screening/oral/HealthProfessional>. Last modified: January 19, 2015. Accessed January 19, 2015.
8. <http://www.who.int/cancer/detection/oralcancer/en/>
9. Mehrotra R, Gupta DK: Exciting new advances in oral cancer diagnosis: avenues to early detection. *Head Neck Oncol* 2011;3:33
10. Lingen MW: Direct-to-consumer advertising for oral cancer screening devices. *OOOOE* 2009;107:299-300
11. Lingen MW, Kalmar JR, Karrison T, et al: Critical evaluation of diagnostic aids for the detection of oral cancer. *Oral Oncol* 2008;44:10-22
12. Sweeny L, Dean NR, Magnuson JS, et al: Assessment of tissue autofluorescence and reflectance for oral cavity cancer screening. *Otolaryngol Head Neck Surg* 2011;145:956-960
13. Huber MA: Adjunctive diagnostic aids in oral cancer screening: an update. *Tex Dent J* 2012;129:471-480
14. Bhoopathi V, Mascarenhas AK: Utility of oral cancer diagnostic adjuncts in the adult US population. *J Oral Pathol Med* 2013;42:363-367
15. Rethman MP, Carpenter W, Cohen EE, et al: Evidence-based clinical recommendations regarding screening for oral squamous cell carcinomas. *Tex Dent J* 2012;129:491-507
16. Lin K: Screening for the early detection and prevention of oral cancer. *Am Fam Physician* 2011;83:1047
17. Brocklehurst P, Kujan O, O'Malley LA, et al: Screening programmes for the early detection and prevention of oral cancer. *Cochrane Database Syst Rev* 2013;11:CD004150.
18. Glick M, Johnson NW: Oral and oropharyngeal cancer: what are the next steps? *J Am Dent Assoc* 2011;142:892-894

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