Editor's Note:

Oral cancers occur in the lips, tongue, gingiva, floor of the mouth, oropharynx and tonsils, hypopharynx, salivary glands, nasopharynx, and other oral and pharyngeal areas. Over the last 30 years, the typical location of cancers within the oral cavity has changed. The overall 5-year survival rate for oral cancer is about 50%, and survival rates for cancers detected earlier are much better than rates for cancers identified in later stages. However, only about one third of all oral cancers are detected in stage I: the earliest stage. Therefore, early detection of suspicious lesions by dentists or other healthcare professionals, with referral to an oral and maxillofacial surgeon for biopsy and timely treatment, offers patients the best chances of survival from oral cancers.

An oral exam by a healthcare professional is the most effective way to detect suspicious lesions. To learn more about oral cancer detection by dental personnel, focusing on proper diagnosis and referral, Medscape interviewed an oral and maxillofacial surgeon, Steven M. Roser, DMD, MD, and an oral pathologist, Robert O. Greer, DDS, ScD.

Medscape: Please tell us about current oral cancer and mortality trends.

Dr. Roser: As the sixth most common form of cancer in the United States, oral cancer has high mortality, with a 5-year survival rate of 50% among all patients. For 2010 the National Cancer Institute (NCI) estimated that there were 36,540 new cases (25,420 in men and 11,120 in women) and 7880 deaths from cancer of the oral cavity and oropharynx. Five-year survival rates are 82.5% for disease that is localized; 54.7% for disease that has regional involvement, including the lymph nodes; and 32.3% for disease that has metastasized, according to aggregated data from 2001-2007 by the NCI.[1] (Please note that the NCI's Surveillance, Epidemiology and End Results [SEER] uses staging of localized, distant, regional, and unstaged, whereas the American Joint Committee on Cancer uses clinical definitions of stages I, II, III, and IV).

Stage I disease is typically observed by a general dentist during routine oral examinations or screenings. Although the likelihood of suspicious oral lesions is small, for patients with oral cancer early detection and referral for treatment could mean the difference between life and death. Dentists have an important role in detecting and referring patients for oral cancer because other health professionals do not check this area and oral self-examinations are not normative.

Medscape: Do age and ethnicity play a role in the prevalence of oral cancer?

Dr. Roser: In recent aggregated data from the NCI's SEER, the median age at diagnosis for cancer of the oral cavity and pharynx was 62 years, although oral cancer can occur at any age (X Close Table I-11).[1]

Median age at death for cancer of the oral cavity and pharynx was 67 years. Whereas age-adjusted incidence was 10.4/100,000 men and women, the incidence of oral cancer in black men was higher than in white men (16.1/100,000 black men vs 15.7/100,000 white men) with similar rates for women (5.8/100,000 black women vs 6.1/100,000 white women). Black men had lower 5-year survival rates than men of all races. For every 100,000 men diagnosed with oropharyngeal cancer, the 5-year mortality rate was 6.3 for blacks compared with 3.7 for whites and 3.9 for all races.

Medscape: Are there other risk factors besides age and ethnicity?

Dr. Greer: Tobacco use, particularly smoking and smokeless tobacco, is an important risk factor for developing oral cancer. Other risk factors include infection with human papillomavirus (HPV), alcohol abuse, and radiation treatment for lip cancer. Oral cancer from pipe smoking tends to be site specific. It typically occurs on the part of the lip in direct contact with the pipe stem or in the area of the palate where tar and nicotine enter the oral cavity.

A number of people who have no other risk factors except for testing positive for HPV develop oral cancer earlier, in their 30s-50s. Landmark research conducted by the Johns Hopkins Oncology Center and confirmed by other investigators has shown a strong association between HPV and certain types of oral cancer.[2-4] Traditionally, oral cancers have been found on the floor of the mouth or lateral tongue. Cancers caused by HPV infection have prompted some changes in location of lesions to the posterior
palate and tip of the tongue. One study analyzed oral cancer lesions and showed that blacks were less likely to have HPV-associated oral cancers. These types of oral cancers have improved treatment outcomes and may account for some racial disparities in survival rates.[5]

**Medscape: What is the dentist's role in screening for oral cancer?**

**Dr. Greer:** The dentist should perform an oral cancer screening exam on every new patient at the first visit and on every returning patient on an annual basis, unless specific risk factors are identified that require more frequent screening. Most oral cancers are initially detected visually by dentists rather than physicians. Suspicious oral lesions can be detected visually for both early and more advanced lesions.

**Medscape: What signs and symptoms do patients with oral cancer exhibit?**

**Dr. Greer:** Oral cancer has no defined presentation and often no symptoms. Although some patients may experience numbness, bleeding, or even excruciating pain, a white or red patch, ulcer, or blister inside the mouth that persists for more than 2 weeks should be evaluated. The dentist should always look for suspicious signs whether the patient presents with complaints.

**Medscape: How should a dentist perform an oral cancer examination?**

**Dr. Greer:** A thorough examination of all soft tissues of the oral cavity should be performed routinely for every patient, and done the same way every time. Some dentists start in the back of the mouth, whereas others begin in the front with either a counterclockwise or clockwise sweep across the tissues. This process varies among practitioners. A careful examination of all of the mucosa is necessary, particularly the mucosa of the tongue and floor of the mouth, as well as palpation of the neck for any enlarged lymph nodes. Be sure to examine the surrounding areas: cheek mucosa, palate, gingiva, and the oropharynx.

Obtaining the patient's history is equally important because the most common factors associated with oral cancer include smoking, alcohol, oral habits, and chronic trauma such as ill-fitting full or partial dentures. The entire dental team can assist in educating patients about ways to reduce the risks for oral cancer.

**Medscape: What types of screening tests are available?**

**Dr. Greer:** Many scientific papers have been published on diagnosing cancer of the mouth. Screening tests are available, but the gold standard is the biopsy. A screening test that can be helpful in early detection is a tissue stain called toluidine blue dye. After the patient rinses with toluidine blue dye, the dentist inspects the oral mucosa. Normal tissues remain unchanged, whereas cancerous tissue will absorb the stain and turn blue. This alteration in color alerts the clinician to a potential cancerous lesion and indicates where to perform the biopsy.

Another screening technique is the use of devices such as the ViziLite® (Zila Inc.; Batesville, Arkansas), VELscope® (LED Denta Inc.; Burnaby, British Columbia, Canada), Microlux™ DL (AdDent, Inc.; Danbury, Connecticut), Identafi® 300 Ultra (Triamar; Houston, Texas), and the DOE Oral Exam System (DentLight Inc.; Richardson, Texas). Some devices require a rinse with a special solution before the dentist illuminates the oral mucosa. These devices either emit light of a special wavelength, which can distinguish between normal and abnormal tissues, or consist of microscopic techniques that allow better visualization of tissues. As the light passes through areas treated with a special rinse solution, normal tissue will absorb light and appear dark, whereas abnormal tissue will not absorb the stain and will be white. These devices have various sensitivities and specificities and are only screening devices. They do not substitute for a definitive diagnosis by biopsy. Although the general dentist is in a much better position to notice early-stage cancer, the oral surgeon often biopsies lesions that may turn out to be malignant. For the general dentist, referral and scheduling a biopsy quickly will lead to a definitive diagnosis that makes a difference in the patient's outcome.

**Medscape: Is visual diagnosis alone sufficient to detect oral cancer? What scientific data are available on this topic?**

**Dr. Roser:** Data are emerging on the use of oral screening devices compared with visual detection alone in detecting oral cancer. A recent review of the peer-reviewed literature on screening to reduce mortality compared visual inspection alone or visual plus toluidine blue dye as well as the biopsy brush. Of 1719 studies for consideration, only 1 study that met the inclusion criteria for consideration for review showed significant reductions in mortality in the screening group compared with the control group. However, this one study had a number of weaknesses including bias and other methodological considerations. For other methods
the peer-reviewed literature is limited on whether detection systems are better compared with visual alone or visual with dye.[6]

**Medscape: How is a definitive diagnosis of oral cancer made?**

**Dr. Roser:** A pathologist evaluating the biopsy sample makes the definitive diagnosis. At this stage the patient could present with anything from a precancerous lesion to stage IV cancer. Once a diagnosis of oral cancer is made, it is important that treatment begin quickly to assure the best long-term outcome and survival for the patient.

**Medscape: Thank you both for this information on an important topic for dentists.**

**References**