College of Dental Surgeons of British Columbia

Clinical Practice GUIDELINES
MARCH 2008

Guideline for the Early Detection of Oral Cancer in British Columbia 2008

At the request of the College of Dental Surgeons of British Columbia, this guideline has been written by a working group of the BC Oral Cancer Prevention Program, which is a multidisciplinary team composed of clinicians and scientists from the BC Cancer Agency.

This guideline is intended to provide guidance about the appropriate use of oral cancer screening techniques and to help dentists make informed decisions about screening for oral cancer in practice. It should be used to facilitate clinical decision-making.

Due to the importance of ongoing research related to oral cancer screening, this guideline will be updated on a regular basis with multidisciplinary input.

- Oral cancer is a common cancer of global concern. It is known to be a devastating disease of tremendous consequence to the individual, to family and to society.
- This year 3,200 people will be diagnosed with oral or pharyngeal cancer in Canada. Of these, it is estimated that about 2,700 (84 per cent) could potentially be detected by a dentist.[1]
- The five-year survival rate is approximately 62 per cent.
- Early detection has the potential to significantly reduce oral cancer deaths and morbidity.
- Known risk factors include tobacco and alcohol consumption, together responsible for about 75 per cent of oral cancers in developed countries.
- Most oral premalignant lesions and cancers should be detectable at the time of a comprehensive oral examination.
- These lesions often present as a white patch or, less frequently, a red patch. Progression from premalignant lesions to cancer usually occurs over years.

BC Cancer Agency
CARE + RESEARCH
An agency of the Provincial Health Services Authority

orca bc oral cancer prevention program

RECOMMENDATIONS

These recommendations are intended for use in adult patients. They do not apply to individuals with a personal history of oral cancer since these patients require specialized care.

- It is the expectation that a head, neck and oral soft tissue examination is completed on all patients at the time of the new patient examination and at general dental recall.
- We recommend a standardized step-by-step approach to oral cancer screening and to the evaluation of any mucosal lesion suspected to be premalignant or malignant.
- On the basis of present evidence and the potential for benefit, it is recommended that systematic oral cancer screening be offered. At present, our consensus recommendation is to offer this annually to all individuals from age 40.
- Adjunctive screening tools (see No. 3) may be of added value and could be considered in conjunction with the annual oral cancer screening examination or at the time of identification of any suspicious lesion.
- The use of these adjunctive screening tools requires appropriate training and experience.

APPROACH

Oral Cancer Screening and Mucosal Lesion Assessment

1. Patient History [2]

The first step in screening for oral cancer is the completion of a patient history, which should include review of:

- General health history including a list of current medications and medication allergies
- Oral habits and lifestyle, with particular reference to quantity, frequency and duration of tobacco use and alcohol consumption
- Symptoms of oral pain or discomfort.

2. Visual Screening Examination [3]

Extraoral examination:

- Inspect the head and neck region for asymmetry, tenderness or swelling.
- Palpate the submandibular, neck and supraclavicular regions for lymph nodes, paying particular attention to size, number, tenderness and mobility.
- Inspect and palpate the lips and perioral tissues for abnormalities.

Intraoral examination:

- Systematically inspect and palpate all oral soft tissues, paying particular attention to the high-risk sites for the development of oral cancer including the lateral and ventral aspects of the tongue, floor of mouth and the soft palate complex.

Lesion inspection: [4]

- Evaluate the specific characteristics of each lesion with particular attention to size, colour, texture and outline. Particular attention to predominantly white, red and white, ulcerated and/or indurated lesions is indicated.

Documentation:

- At the time of initial assessment and at each re-evaluation appointment, it is recommended that an image of any clinically visible lesion be obtained and a lesion tracking sheet be completed. This document is available at *www.orcanet.ca*

3. Optional Screening Adjuncts

- Adjunctive visual tools can enhance contrast between the clinical lesion and the adjacent normal oral tissue. Techniques currently used by the BC Oral Cancer Prevention Program affiliated clinics include toluidine blue staining and direct fluorescence visualization. Mucosal changes staining positively with the application of toluidine blue or showing loss of fluorescence occur in premalignant or malignant conditions but are not restricted to only these changes.

- Although these techniques are not diagnostic alone, they may enhance lesion characteristics, identify satellite lesion sites and assist in biopsy site selection. These techniques are complementary to and not a replacement for the comprehensive history and conventional visual and manual head, neck and oral examination. Good clinical judgment remains indicated in all circumstances.

    - ***Toluidine Blue Staining***

      Toluidine blue has a long history of use as a vital stain to identify oral cancers. Research conducted at the BC Cancer Agency has shown that biopsy-proven oral premalignant lesions that stain positively are six times more likely to become oral cancers than those that do not. This finding supports a role for this vital stain in identification of high-risk oral lesions.[5]

    - ***Direct Fluorescence Visualization***

      New technologies are emerging, such as the intraoral application of direct fluorescence visualization. The technology utilizes a hand-held device that emits a cone of blue light that, when directed into the mouth, excites various molecules within mucosal cells, causing them to absorb the light energy and re-emit it as visible fluorescence. Healthy oral tissue emits a pale green fluorescence while altered tissues, which attenuate the passage of light, appear dark brown to black (loss of fluorescence).[6,7,8]

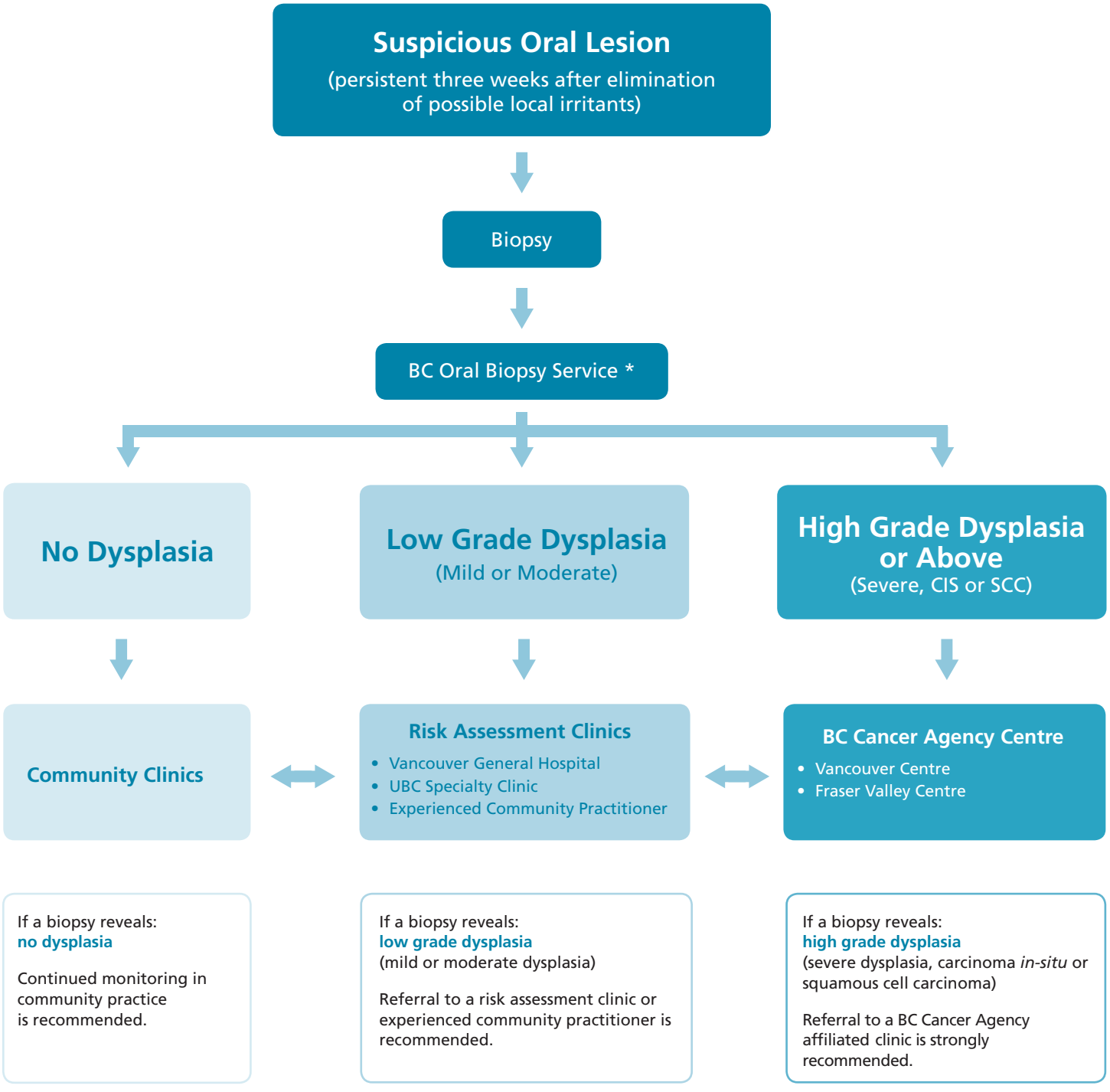
4. Diagnostic Biopsy

- If a suspicious mucosal lesion persists for more than three weeks following removal of identified local irritants such as trauma, infection or inflammation, diagnostic biopsy is required. Alternatively, referral to a BC Oral Cancer Prevention Program affiliated referral clinic or community-based practitioner with expertise in the evaluation and management of premalignant or potentially malignant conditions is recommended.

- Tissue biopsy remains the gold standard for diagnosing an oral premalignant lesion or oral cancer. A carefully selected, performed and interpreted biopsy is critical in rendering an accurate diagnosis.[9]

- If biopsy-proven dysplasia is identified, an oral risk assessment is recommended to determine appropriate management. This may range from long-term monitoring to medical or surgical therapy.

RECOMMENDED REFERRAL PATHWAY IN BRITISH COLUMBIA



* The BC Oral Cancer Prevention Program is closely affiliated with the BC Oral Biopsy Service. Treatment and/or referral decisions are based on the clinical presentation and pathology results.

LEVEL OF EVIDENCE

There is ample scientific evidence to show the *potential* benefits of oral cancer screening. Visual inspection is simple and risk-free, and can identify oral premalignant lesions and early-stage cancers. The addition of methods such as toluidine blue staining, direct fluorescence visualization, and a wide range of developing procedures, adds to that potential.

The standard of scientific evidence required to *prove* that screening is beneficial to the patient is extremely demanding. The ideal is to have evidence from a prospective randomized trial to show that subjects who are offered screening have a reduction in deaths, as compared to comparison subjects not offered screening. A study to show this needs to be extremely large, with long follow-up. Screening for breast cancer by mammography and for colorectal cancer by faecal occult blood testing are the only cancer screening procedures for the general population supported by this ideal best evidence.

Oral cancer is a less frequent problem than breast or colorectal cancer in developed countries, and no such large-scale prospective studies have been done. A study started now to assess the use of the newer technologies in oral cancer screening would take many years to produce mortality results.

However, evidence of benefit may also be obtained by the demonstration that, with screening, cancer is detected at an earlier stage with better clinical results, or from observational studies comparing screened and unscreened subjects or populations. The most long-established cancer screening program, for cervical cancer by Pap smears, is not supported by randomized trials, but is supported by consistent evidence from these weaker types of study design.

For oral cancer screening, there is in fact randomized trial evidence of benefit, but in a different environment. An ambitious randomized trial of visual screening for oral cancer in India involved more than 95,000 people being offered oral visual inspection by community health workers, with a similar number of people not offered screening, and up to 12 years monitoring of mortality results. As might be expected, clinical follow-up was not easy: only 63 per cent of people found with lesions had the recommended further assessment. Despite this, compared to the control group, deaths from oral cancer were reduced by 21 per cent in the group offered screening, which was not statistically significant, but in users of tobacco or alcohol the reduction was 34 per cent, which was statistically significant.[10]

No such extensive trials of oral cancer screening in developed countries have been performed. An extensive review[11] includes several studies of visual inspection, not assessing mortality reduction, but assessing acceptance of screening, yield of abnormalities, shift towards earlier stage cancers, and survival data for the patients with cancer detected. This review concluded that while there was no strong direct evidence of benefit, on the basis of the available data in the United Kingdom context, high-risk opportunistic screening by a general dental medical practitioner might be cost-effective.[11]

The clinical recommendations presented here for dental practice in Canada address opportunistic screening, that is, screening in the context of a clinical assessment linked to routine care, and give information about subjects who may be at higher risk. We accept that there is no definitive scientific evidence of ultimate benefit of oral cancer screening directly relevant to the Canadian context, as no such study has been done, but the results of the Indian trial and other sources of evidence are encouraging. We encourage dentists to take part in further research and evaluation studies where they have the opportunity.

The recommendation that oral cancer screening should be offered in the context of routine dental care is justified by the simplicity of the procedure and the minimal risks involved, compared to the potential benefits.

Selected References

1. Canadian Cancer Society, National Cancer Institute of Canada. *Canadian Cancer Statistics* 2007. pp 1-112. 2007. Toronto, Canadian Cancer Society.
2. Laronde DM, Hislop TG, Elwood JM, Rosin MP. Oral cancer: Just the facts. *Journal of the Canadian Dental Association* 2008; 74(3). In press.
3. Poh CF, Williams PM, Zhang L, Rosin MP. Heads up! – a call for dentists to screen for oral cancer. *Journal of the Canadian Dental Association* 2006; 72(5):413-6.
4. Williams PM, Poh CF, Ng S, Hovan AJ. Evaluating a suspicious oral mucosal lesion. *Journal of the Canadian Dental Association* 2008; 74(3). In press.
5. Zhang L, Williams PM, Poh CF, Laronde DM, Epstein JB, Durham JS, and others. Toluidine blue staining identifies high-risk primary oral premalignant lesions with poor outcome. *Cancer Research* 2005; 65(17):8017-21.
6. Lane PM, Gilhuly T, Whitehead PD, Zeng H, Poh CF, Ng S and others. Simple device for the direct visualization of oral-cavity tissue fluorescence. *Journal of Biomedical Optics* 2006; 11(2):024006.
7. Poh CF, Ng SP, Williams PM, Zhang L, Laronde DM, Lane P and others. Direct fluorescence visualization of clinically occult high-risk oral premalignant disease using a simple hand-held device. *Head and Neck* 2007; 29(1): 71-76.
8. Poh CF, Zhang L, Anderson DW, Durham JS, Williams PM, Priddy RW and others. Fluorescence visualization detection of field alterations in tumor margins of oral cancer patients. *Clinical Cancer Research* 2006; 12(22):6716-6722.
9. Poh CF, Ng S, Berean K, Williams PM, Rosin MP, Zhang L. Biopsy and histopathalogic diagnosis of oral premalignant lesions. *Journal of the Canadian Dental Association* 2008; 74(3). In press.
10. Sankaranarayanan R, Ramadas K, Thomas G, Muwonge R, Thara S, Mathew B and others. Effect of screening on oral cancer mortality in Kerala, India: a cluster-randomised controlled trial. *The Lancet* 2005; 365(9475):1927-1933.
11. Speight PM, Palmer S, Moles DR, Downer MC, Smith DH, Henriksson M and others. The cost-effectiveness of screening for oral cancer in primary care. *Health Technology Assessment* 2006; 10(14).

Glossary of Terms

Erythema: Redness of the oral mucosa that suggests epithelial inflammation, thinness and irregularity.

Erythroplakia: A well-defined red, velvety or granular lesion of the oral mucosa.

Homogenous: A descriptive term for a mucosal lesion that is uniform in appearance.

Indurated: An abnormally firm or hard portion of tissue with respect to the surrounding similar tissue. A term often used to describe the feel of locally invasive malignant tissue on palpation.

Leukoplakia: A white patch that cannot be rubbed off and cannot be characterized clinically or histologically as any other lesion.

Nodular: A descriptive term referring to a granular surface texture.

Speckled: A mucosal lesion that has red and white components to it.

Ulceration: The result of loss of epithelial integrity involving all layers of epithelium with resultant exposure of the underlying connective tissue.

Verrucous: A descriptive term referring to an irregular mucosal surface consisting of numerous elongated or "wart-like" white surface projections.

The Early Detection of Oral Cancer Working Group

Membership

Dr. Michele Williams	Co-Chair, Oral Medicine Leader, *BC Cancer Agency*
Dr. Mark Elwood	Epidemiologist, Community Medicine; Vice President, Family & Community Oncology, *BC Cancer Agency*
Dr. Greg Hislop	Epidemiologist, Community Medicine, *BC Cancer Agency*
Dr. Calum MacAulay	Physicist; Head, Cancer Imaging, *BC Cancer Agency*
Dr. Catherine Poh	Oral Pathologist , Outreach Leader, *BC Cancer Agency*
Dr. Lewei Zhang	Oral Pathologist; Head, Division of Oral Medicine & Pathology, *University of British Columbia*
Dr. Meredith Moores	Community Dentist
Ms. Denise Laronde	Dental Hygienist; PhD Candidate, *Simon Fraser University*
Ms. Heather MacKay	Registrar, *College of Dental Surgeons of BC*
Dr. Peter Lobb	President, *College of Dental Surgeons of BC*
Dr. Miriam Rosin	Chair, Translational Scientist; Director, BC Oral Cancer Prevention Program, *BC Cancer Agency*

Acknowledgements

Dr. Simon Sutcliffe	President, *BC Cancer Agency;* Vice-Chair, *Canadian Partnership Against Cancer*
Dr. Barry Sheehan	Radiation Oncologist; Chair, Head and Neck Tumor Group, *BC Cancer Agency*
Dr. John Hay	Radiation Oncologist; Head and Neck Tumor Group, *BC Cancer Agency*
Prof. Rick Gallagher	Leader, Cancer Control Research, *BC Cancer Agency*
Dr. Stuart Peacock	Health Economist; Director, Health Economics & Cancer Research, *BC Cancer Agency*
Dr. Joan Bottorff	Dean, Faculty of Health & Social Development, *University of British Columbia*
Dr. Allan Hovan	Provincial Practice Leader, Oral Oncology, *BC Cancer Agency*
Dr. Chris Zed	Associate Dean, Strategic & External Affairs, *University of British Columbia;* Head, Division of Dentistry, *Vancouver Hospital*
Dr. Andy Coldman	Vice President, Population Oncology, *BC Cancer Agency*
Dr. John O'Keefe	Editor-in-Chief, Journal of the Canadian Dental Association, *Canadian Dental Association*
Ms. Jocelyn Johnson	Executive Director, *BC Dental Association*
Ms. Nicole Adams	Director of Communications, *BC Cancer Agency*
Ms. Margot White	Director of Communications, *College of Dental Surgeons of BC*
Ms. Zarha Musa	Graduate Student, Health Care & Epidemiology, *University of British Columbia*
Ms. Karissa Johnston	Graduate Student, Health Care & Epidemiology, *University of British Columbia*

Participants of the Oral Cancer Community Screening Initiatives

Clinical Practice Guidelines *provide directions for dentists and certified dental assistants in how to meet the professional standards in specific situations. They are developed by and for practitioners and are designed to enhance, not replace, clinical judgement and expertise. Guidelines describe best practices and are not meant to be rigid or definitive in all situations. For CDSBC, Clinical Practice Guidelines could contain practice parameters which should be considered by all dental practitioners in the care of their patients.*

To Provide Feedback

The Early Detection of Oral Cancer Working Group encourages your feedback. If you wish to provide feedback, need further information or have difficulty applying this guideline, please email us at **guidelinefeedback@cdsbc.org** or contact us using the information below.

Regulating dentists and certified dental assistants in the public interest.

College of Dental Surgeons of British Columbia

Suite 500 – 1765 West 8th Ave.
Vancouver, B.C. V6J 5C6
Tel: 604 736-3621 or 800 663-9169
Fax: 604 734-9448 or 866 734-9448
Email: postmaster@cdsbc.org
www.cdsbc.org