

# Screening for Common Oral Diseases

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Screening is a method used for the detection of a disease at a point in its natural history when it is not yet symptomatic. The ability to screen for a particular disease is contingent on the disease having a detectable pre-clinical phase that is long enough to permit its early detection. The logic of screening rests upon the assumption that early detection of disease may allow for interventions that alter its natural course, thereby halting disease progress and preventing the onset of adverse outcomes. In this sense, the aim of screening is generally secondary prevention.

Beyond altering the course of disease, there are additional considerations that must be addressed whenever a screening strategy is proposed. The benefits that may be obtained in terms of improved health must be balanced against a variety of other factors, including cost (e.g. equipment, manpower), ethical issues (e.g. labelling of individuals who screen positive), the efficacy of interventions (e.g. effect on quality of life), and side effects (e.g. does early detection do more harm than good?).

The advantages of implementing generalized screening programs for human diseases are numerous and often self-evident. Beyond the primary benefit of improving the overall health of the population, early detection in the pre-clinical phase followed by preventative measures to arrest disease progress should yield several secondary benefits, including less patient time spent with the health care professional, more time for the health care professional to treat other patients, and cost savings for patients and third-party providers (i.e., governments and insurance companies).

While there are successful examples of screening for medical disorders (e.g., phenylketonuria, breast cancer, cervical cancer), routine screening programs have not been implemented for relatively common oral diseases observed in general dental practice, such as caries, periodontal disease and oral cancer. Early detection would likely reduce the morbidity associated with dental caries and periodontal disease (e.g., pain, halitosis, gingival recession,<sup>1</sup> gingival bleeding,<sup>1</sup> tooth loss,<sup>2</sup> compromised oral function), and the mortality associated with oral cancer. Furthermore, valid methods already exist for the screening of these oral diseases, in accordance with the principles outlined by Wilson and Junger<sup>3</sup> in 1968 for the World Health Organization (see sidebar). So what explains the

lack of routine screening programs? I would suggest that non-methodological factors are responsible, and propose to briefly examine these factors at two levels: screening at the dental office and screening in the general population.

## Screening at the Dental Office

The general practitioner should possess both the necessary training and equipment to screen reliably for dental caries, by examination of the teeth (e.g. with a metal explorer) and radiography<sup>4</sup>; periodontal disease, by radiography<sup>4</sup> and standardized tests such as the Community Periodontal Index of Treatment Needs (CPITN)<sup>5</sup>; and oral cancer, by visual inspection of the oral cavity.<sup>6</sup> As such, these tests should be integral components of regular patient check-ups.

One of the main problems with screening at the dental office is limited accessibility: individuals who are at greatest risk for oral diseases, and who require more frequent screening, are often those in lower socio-economic groups. These patients, many of whom are elderly, are less likely to schedule regular visits to the dentist due to financial constraints, a lack of adequate facilities, or indifference towards their oral health.

## Screening in the Population

A potential solution to the limited accessibility of screening at the dental office is generalized population-based screening. While it may be argued that the medical basis of large-scale screening programs for dental caries, periodontal disease, and oral cancer is justified, the likelihood of implementing such programs is slim. One reason for this is that the development of diagnostic and therapeutic strategies seems to depend not only on the relative impact of the disease, but also on the social perception of the disease and its victims.

Consider the examples of oral cancer and cervical cancer. When judged on a subjective trait such as physical appearance, the individuals at highest risk for oral cancer (i.e., elderly men who smoke and drink alcohol)<sup>7</sup> are not considered as attractive or as valuable to society as those most susceptible to cervical cancer (i.e., young and middle-aged women). This unfortunate reality translates into more funding from both government and private sources for research into cervical cancer than oral cancer, even though oral cancer takes a far greater toll on

human life; indeed, in Canada, the incidence of oral cancer is 16 times greater than that of cervical cancer (0.132% and 0.08%, respectively),<sup>8</sup> while the mortality rate of oral cancer is 56 times greater than that of cervical cancer (0.112% and 0.002%, respectively).<sup>8</sup> It appears that conducting a pelvic examination with Pap smear is a more widely accepted screening procedure than is oral examination, despite the oral cavity being more readily accessible to observation and biopsy. As a result, the majority of patients with oral cancer are diagnosed with advanced disease, rather than at an earlier stage when they are asymptomatic and have a better prognosis.<sup>9</sup>

## Conclusion

There has been much debate over the determination of appropriate intervals between screens. Consider the example of dental caries: given that dental caries affects primarily younger individuals, it follows that screening intervals should increase with age. One study concluded that the optimal interval between examinations was 10 to 12 months for those aged 5 to 9, and close to two years for those aged 10 to 19.<sup>10</sup> In the United States, the American Dental Association and the Food and Drug Administration recommend a dental examination every six months. However, 14-year-olds in England who received dental examinations at intervals greater than six months did not display more advanced caries than those who were examined every six months.<sup>11</sup> Indeed, increased intervals between caries screening may even be beneficial, especially in areas supplied with fluoridated water, as both patient costs and the risk of iatrogenic interventions would be reduced.

## Ten Principles of Screening

1. The condition sought should pose an important health problem.
2. The natural history of the disease should be well-understood.
3. There should be a recognizable early stage.
4. Treatment of the disease at an early stage should be of more benefit than treatment started at a later stage.
5. There should be a suitable test.
6. The test should be acceptable to the population.
7. There should be adequate facilities for the diagnosis and treatment of abnormalities detected.
8. For diseases of insidious onset, screening should be repeated at intervals determined by the natural history of the disease.
9. The chance of physical or psychological harm to those screened should be less than the chance of benefit.
10. The cost of a screening program should be balanced against the benefit it provides.

While the results of such studies may serve as useful guidelines, the ultimate decision on whether or not to screen someone (and if so, how often) must be based on clinical judgment, and should be tailored to the individual patient. In this sense, it is the responsibility of the dentist to acquire an accurate history for the identification of risk factors, since high-risk patients should be monitored more stringently than those at low risk.

The morbidity and mortality associated with dental caries, periodontal disease, and oral cancer could be significantly reduced if there were a stronger social and political impetus to screen for common oral diseases. While the goal of large-scale population-based screening may be too ambitious in terms of logistics and manpower, the implementation of smaller, community-based programs, restricted to testing individuals at highest risk, seems feasible. Immediate efforts should focus on fundamentally altering the public perception of oral diseases and their impact, through education campaigns that begin at the level of the general dental practitioner. ♦

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